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Myrna (Leong) Hawes

1969

Catalogue

122-411

Ecuador

Peru

Myrnatberg
1969

Catalog

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E side

Net. Pichincha, 3500±m., Province de Pichincha, Ecuador

June 29	122	♀ ^{Thomomys} Phyllotis ^{3 embryos} haggardi	172-100-21-14-10	15.9g
	123	♀ ^{Thomomys} haggardi ^{1 embryo}	196-111-23-18-12	21.2g
July 1	124	♂ ^{+chrom. testis 7x4} Thomomys ^{+chromosomes}	215-111-23-18-15	23g
July 2	125	♀ Akodon ^{+chromosomes}	170-69-20-16-13	27g
July 3	126	♀ Akodon	184-78-26-17-12	22g

5.5 mi NE San Bartolo, Depto. Lima, Peru

July 4 127 ^{in alcohol} Gecko

7 km. SSE Chilca, Depto. Lima, Peru

July 6	128	♂ ^{coll. OPPearson} Mus musculus ^{testis 7x4}	154-75-16-16-12	12g
	129	♀ " " ^{+chromosomes}	144-68-16-14-11	9g
	130	♀ " " ^{+chromosomes}	134-71-17-14-11	9g
	131	♀ " " ^{+chromosomes}	158-81-18-15-12	13g
	132	♂ " " ^{testis 5x3}	140-73-16-14-11	11g

2 mi. SW Casapalca, 13,300 ft., Depto. Lima, Peru

July 8	133	♀ ^{+chrom. coll. OPPearson} Phyllotis ^{andium}	161-70-19-18-14	20g
	134	♀ ^{+chrom. sorella coll. OPPearson} Calomys ^{+embryo}	146-61-18-17-14	14g
	135	♂ ^{+chromosomes coll. OPPearson} Phyllotis ^{andium} ^{testis 3x3}	207-108-26-21-16	26g

2 mi. N Casapalca, 14,400 ft., Depto. Lima, Peru

	136	♀ ^{+chrom coll. Ray Hillborn} Calomys ^{ducilla}	130-41-19-19-15	17g
	137	♂ ^{+chrom coll. Ray Hillborn} " "	117-40-(-) 17-13	15g

2 mi. SW Casapalca, 13,300 ft., Depto. Lima, Peru

July 9	138	♀ ^{+chromosomes skin only coll. R. Hillborn} Calomys ^{sorella} ^{4 embryos}	157-66-19-18-14	20g
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8 mi SE Chilca, 150 ft., Depto. Lima, Peru

July 12	139	♀ ^{skull only} Mus musculus ^{no embryos}	122-60-17-12-10	8g
July 15	140	♂ ^{skull only} " (117) ^{testis 4x2}	132-67-19-13-10	8g
	141	♀ ^{skull only} " (125) ^{no embryos} ^{pelvis not opened}	139-68-17-13-10	8g
	142	♂ ^{skull only} " (127) ^{testis 3x2}	146-70-17-14-10	9g

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8 mi. SE Chilca, 150 ft., Depto. Lima, Peru

July 15
(cont.)

143	♀	skull only Mus musculus	no embryos juvenile	127-62-16-12-10	6g.
144	♂	skull only "	testes 3x1	147-73-18-14-11	9g.
145	♀	skull only "	juvenile	134-65-16-13-10	7.4g
146		gecko			

Hacienda San Javier Alto, 3 km. NNE Chilca, Depto Lima, Peru

July 16

147	♀	Saltator albicollis	coll. John Davis non-breeding		51g.
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7 km. SSE Chilca, Depto Lima, Peru

July 17

148	♂	skull only Mus musculus	testes 6x4	151-76-15-13	13g.
149	♂	skull only "	testes 2x3	152-67-16-(-)	9g.
150	♀	skull only "	no embryos	149-74-16-(-)	11g.
151	♀	skull only "	closed - no embryos	136-65-17-14	9g.
152	♂	skull only "	head missing testes 3x4	(-)-70-18-15	8g.
153	♀	skull only "	closed	161-77-16-13	13g
154	♀	skull only "	4 embryos	138-69-16-14	15g.
155	♂	skull only "	testes 3x2	143-69-16-13	8g.
156	♀	skull only "	closed	163-81-17-(-)	12g.
157	♂	skull only "	testes 6x4	143-68-15-12	11g.
158	♂	skull only "	testes 5x6	164-82-18-14	13g
159	♂	skull only "	testes 5x3	155-74-18-14	12g.
160	♀	skull only "	closed	143-69-16-14	9g.
161	♀	skull only "	testes 4x5	169-83-18-15	13g.
162	♂	skull only "	testes 4x6	154-75-17-(-)	12g.
163	♂	skull only "	testes 2x3 4x6	153-74-17-(-)	12g
164	♂	skull only "	testes 4x7 2x3	142-72-18-12	9g.
165	♂	skull only "	testes 2.4x7	153-77-19-(-)	13g.
166	♀	skull only "	open, no embryos	148-72-17-14	12g.
167	♂	skull only "	testes 2x3	132-69-17-13	8g.

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2 m.
7 km SSE Chilca, Depto. Lima, Peru (cont.)

July 18 (cont.)	168	♂ skull only Mus musculus testes 4x5	150-72-18-12	11g.
	169	♀ skull only closed	135-64-16-14	8g
	170	♂ skull only testes 3x5	149-76-17-13	10g.
	171	♀ Oryzomys xanthodermus no embryos	246-122-31-19-15	37g.
	172	♂ skull small + chromosomes coll. R. Hilborn	801-159-35-23-16	80g.
	173	♀ Phyllotis Amicus + chromosomes coll. R. Hilborn	208-111-23-26-21	22g.
	174	♂ Phyllotis Amicus testes 7x5	196-106-23-25-21	20g.
July 18	175	♂ skull only Mus musculus testes 3x4	143-77-18-12	9.9g
	176	♀ skull only testes 4x7	153-81-18-14	13g
	177	♂ skull only testes 2x3	132-67-17-13	7.3g
	178	♀ skull only open - no embryos	159-78-17-(-)	13g.
	179	♂ skull only testes 4x6	150-78-19-14	11g.
	180	♂ skull only testes 2x3	136-69-17-14	7.4g
	181	♀ skull only closed - no embryos	124-61-17-13	8.0g.
	182	♂ skull only teste 4x5	140-68-18-13	9.5g
	183	♂ skull only testes 4x3	(92)-(22)-18-12	8.5g.
	184	♂ + chromosomes Oryzomys xanthodermus testes 9x15	295-146-31-22-16	79g.
July 19	185	♂ skull only Mus musculus testes 1x2	126-61-17-12	6.1g
	186	♂ skull only testes 3x5	130-65-15-13	7.9g.
	187	♂ skull only testes 4x7	144-73-16-13	12g.
	188	♀ skull only closed - no embryos	156-75-17-15	14g.
	189	♀ skull only closed - no embryos	139-73-19-13	9.5
	190	♂ skull only testes 4x6	162-79-18-14	15g
	191	♂ skull only testes 2x3	136-71-17-14	10g.

4 km. ENE Pucurana, 1500 ft., Depto. Lima, Peru

July 20 192 lizard

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10 Km. S Yauyos, 8000 ft., Depto. Lima, Peru

July 21	193	♂♀ <i>Phyllotis amicus</i>	coll. of Pearson no embryos	187-99-24-20-16	21.5g
	194	♀	" " no embryos	186-96-24-19-16	20g
	195	♂	" " Testes 6x9 coll. C.A. Pearson	200-102-24-20-17	29g.
	196	♂	" " Testes 6x8	210-112-25-20-16	28g.
	197	♂	+ chromosomes <i>Phyllotis andium</i> testes 6x9	240-123-25-22-18	41g.

8 mi. NE Yauyos, 9500 ft., Depto. Lima, Peru

July 22	198	♀ <i>Phyllotis magister</i>	+ chromosomes	248-128-27-25-20	41g.
	199	♂ <i>Marmosa cinerea</i>	+ chromosomes	208-110-15-23-19	18.5g

5 mi. E Yauyos, 9000 ft., Depto. Lima, Peru

July	200	♀ <i>Marmosa cinerea</i>		168-96-24-18-15	10g.
July 23	201	♀ <i>Phyllotis amicus</i>	coll. R. Hilborn no embryos	192-100-24-20-16	20g.
	202	♀ <i>Phyllotis amicus</i>	+ chromosomes no embryos	194-101-25-21-17	24g.

7 km. SSE Chilca, Depto. Lima, Peru

July 25	203	♂ skull only <i>Mus musculus</i>	testes 5x7	176-87-19-15	13.5g
	204	♂♀ skull only	immature - closed	144-72-18-14	8.3g.
	205	♂ skull only	testes 3x5	154-76-19-15	10g.
	206	♂ skull only	testes 3x5	148-75-17-14	9g
	207	♀ skull only	closed	175-75-18-14	8.7g.
	208	♂ skull only	testes 2x3	139-74-17-14	8.0g
	209	♀ skull only	closed no embryos testes 3x5	143-70-17-13	7.8g
	210	♂ skull only	testes 3x5	157-76-17-14	10.5g
	211	♂♀ skull only	open - no embryos	155-76-15-14	4g.
	212	♂ skull only	testes 3x5	150-76-18-14	6.9g
	213	♀ skull only	imm - no embryos coll C Pearson	145-77-18-13	7.1g.
	214	♂ skull only	testes 2x4 coll C Pearson	146-69-15-13	9g.
	215	♀ skull only	no embryos - dead coll C Pearson	133-64-16-12	7.9g
	216	♂ skull only	testes 2x4	136-66-17-13	9.0g.

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July 25 (cont.) 7 km SSE Chilca, Depto. Lima, Peru

217	♂	skull only	testes 3x5	coll. C. Pearson	169-81-17-14	14g.
218	♀	skull only	closed - no embryos	coll. C. Pearson	140-67-17-14	8.8g
219	♂	skull only	testes 2x4	coll. C. Pearson	151-73-15-14	10.5g.
220	♀	skull only	pen. no embryos	coll. C. Pearson	154-74-16-14	12g.
221	♂	skull only	testes 2x4	coll. C. Pearson	145-71-17-15	9g.
222	♀	skull only	closed - no embryos	coll. C. Pearson	154-76-17-14	10.2g
223	♂	skull only	testes 3x6		155-76-17-15	10g.

4 km. ENE Pacurana, Depto. Lima, Peru

224	♀	+chromosomes	Phyllotis amicus	(130)-(37)-23-23-21	25g.
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5 1/2 km NE San Bartolo, Depto. Lima, Peru

225	♀	+chromosomes	Phyllotis amicus	170-86-23-21-18	16g.
226	♀	+chromosomes - parasites	Phyllotis amicus	186-98-23-22-18	20g.

Pomacocha, Yauli Valley, 14212 ft., Depto. Junin, Peru

July 29.

227	♂	+chromosomes	Calomys darwini ^{Sorellus}	testes 4x7	143-55-19-19-15	14g.
228	♂	+chromosomes	Phyllotis darwini ^{himalayas}	testes 3x4	230-121-27-26-23	32g
229	♂	+chromosomes	Calomys darwini ^{Sorellus}	testes 4x6	146-59-20-19-16	17g.
230	♂	+chromosomes	Neotomys ebriosus	testes 7x9	200-75-25-19-14	49g
231	♀	+chromosomes	Akodon bolivianus		144-58-21-12-10	12g.

7 km SSE Chilca, Depto. Lima, Peru

232	♂	+chromosomes	Myotis ^{Myotis}	testes 3x5	79-30-7-14-11	4.6g.
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19 mi. W Chiguian, 8500 ft., Depto. Ancash, Peru

- Aug. 2 233 ♂ ^{+ chromosomes} ~~Phyllotis~~ ~~andium~~ ^{+ chromosomes} testes 7x9 228-119-26-21-17 32g
234 ♀ " " coll. C.B. Koford 184 [84]-25-21-17 24g
235 ♂ " " coll. C.B. Koford testes 4x7 206-117-27-21-16 27g.

25 mi. S Huaras, 12500 ft., Depto. Ancash, Peru

- Aug. 3 236 ♂ hummingbird (*Oriole trochilus*) testes 1mm. 9.4g.
237 ♀ *Akodon boliviensis* no emb. coll. C.B. Koford 150-61-20-14-9 25g.
238 ♀ " " juvenile 128-54-20-13-9 13g
239 Toad

4 mi S, 8 mi. E Recuay, 12500 ft., Depto. Ancash, Peru

- Aug. 4 240 ♂ ^{Calomys sorellus} ~~Phyllotis~~ testes 6x8 coll. C.B. Koford 150-63-19-18-13 17g.
241 ♀ ^{Calomys sorellus} ~~Phyllotis~~ no embryos 133-60-19-16-13 9g.
242 ♀ *Akodon boliviensis* no embryos 155-67-21-14-9 21.5g.
243 ♀ " " no embryos 175-74-22-15-10 23g.

25 mi. S Huaras, 12500 ft., Depto. Ancash, Peru

- 244 ♂ ^{+ chromosomes} ~~Calomys~~ ^{sorellus} ~~duchassa~~ testes 6x8 142-60-18-19-14 13g.

4 mi S, 8 mi. E Recuay, 12500 ft., Depto. Ancash, Peru

- Aug. 5 245 ♀ *Akodon boliviensis* no emb. coll. C.B. Koford 156-65-21-15-10 14g.
246 ♀ ^{longicaudatus} *Oryzomys* ^{+ chromosomes} no emb 181-110-21-14-11 11g.
247 ♂ *Akodon boliviensis* testes 2x4 165-66-20-14-11 17g.
248 ♀ *Oryzomys longicaudatus* ^{+ chromosomes} 206-120-22-14-11 15g.
249 ♂ ^{longicaudatus} *Calomys* ^{sorellus} testes 6x8 152-67-19-18-15 14g.
Aug. 6 250 ♂ ~~Andersomys~~ ^{Phyllotis pictus} testes 8x11 216-101-26-21-17 47g.

- 251 ♀ *Calomys sorellus* no emb. 131-56-18-16-12 11g.
252 ♂ *Oryzomys longicaudatus* no emb. 177-102-22-15-10 10g.
253 ♀ ^{Calomys sorellus?} ~~Phyllotis~~ ^{pictus} 5 emb. 42, 12. (11mm) 158-64-18-17-13 25g.
254 ♀ *Phyllotis pictus* 167-70-25-14-15 24g.
255 ale. frog



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13000 ft.

6 mi. WSW Calvel Tunnel, Depto Ancash, Peru

Akodon jelskii

Aug. 7	256	♀	Neotomus <u>Akodon jelskii</u>	no emb.	169-73-22-16-10	27g.
	257	♀	<i>Oryzomys longicaudatus</i>	no ant	180-109-20-15-11	9g.
	258	♂	<i>Calomys sorellus</i>	testes 4x7	153-60-18-18-13	16g.
	259	♀	<i>Calomys ducilla</i>	no emb.	130-56-17-16-12	11g.
	260	♀	<i>Akodon boliviensis</i>	no emb.	163-72-19-15-10	20g.
	261	♂	" "	testes 7x10	148-61-19-13-9	19g.
Aug. 8	262	♀	<u>Akodon jelskii</u>	no ant	191-76-22-18-12	46g.
	263	♀	" "	no emb. coll. C.B. Koford	150-64-22-15-11	18g.
	264	♀	" "	no emb.	153-54-22-15-10	34g.
	265	♀	<i>Akodon boliviensis</i>	no emb.	150-62-19-13-8	20g.
	266	♀	" "	no emb.	160-67-20-15-12	23g.

Collon, 2 ^{km.} ~~mi.~~ S, 11 Km W Huara, 13000 ft. Ancash, Peru

Aug. 9	267	♀	<i>Phyllotis pictus</i>	no emb. uterus swollen w/ scars	213-88-24-21-16	58g.
	268	♂	<i>Phyllotis pictus</i>	testes 6x10	191-90-25-22-19	36g.
	269	♂	" "	testes 4x6	180-82-25-21-16	28g.
	270	♀	" "	no emb. + chromosomes	159-70-22-19-15	25g.
Aug. 10	271	♀	<i>Phyllotis</i>	imm.	180-80-25-20-17	26g.

1 Km. N, 12 Km. E Pariacota, 6500 ft., Depto. Ancash, Peru

	272	♂	<i>Phyllotis andium</i>	coll. C.B. Koford testes 5x8	194-95-24-19-16	26g.
	273	♂	<i>Phyllotis andium</i>	coll. C.B. Koford testes 6x9 + chromosomes	218-102-26-21-18	31g.
	274	♀	<i>Phyllotis andium</i>	5 emb. (4 l, 1 r.) + chromosomes	206-96-23-20-16	34g.
Aug. 11	275	♀	" "	no emb. + chromosomes	211-106-25-20-16	33g.
	276	♂	" "	testes 5x8 + chromosomes	220-117-25-22-18	28g.
	277	♂	<i>Phyllotis andium</i>	coll. R. Kilborn testes 3x5 imm.	188-94-24-20-17	19g.
Aug. 12	278	♂	yellow finch	skull not ossified		10g.
	279	♂	<i>Phyllotis magister</i>	testes 9x11 + chromosomes	245-120-28-24-20	54g.
	280	♂	<i>Phyllotis andium</i>	coll. C.B. Koford testes 5x8	220-113-26-22-19	29g.



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1 km. N, 12 km. E Pariacota 8500 ft., Depto. Ancash, Peru

- Aug 12 (cont.) 281 ♀ ^{Tolomus} *Phyllotis andium* 5 emb. 32, 21. ^{coll CB Koford} ^{C-B} 210-105-25-21-17 35g.
282 ♀ *Phyllotis andium* no emb. ^{coll R Hilborn} 218-110-24-22-19 30g

6 mi. ENE Pariacota, 6500 ft., Depto. Ancash, Peru

283 large frog

- Aug. 13 284 ♀ *Akodon boliviensis* immature 163-73-20-15-12 15g.

~~Aug. 14~~ 285 15 mi S Pasasmayo, Depto. Libertad, Peru [km. 630

Aug. 14 285 ^{Conapatus} hognose skunk - skull only pick-up

Mouth of Rio Santa, Depto. Lambayeque, Peru, 100 ft.

286 lizard

287 lizard

288 lizard

3 mi. W Mucupe, 100 ft., Depto. Lambayeque, Peru

Aug. 15 289 small gecko

290 medium gecko

291 small lizard

2 mi. SE Morrope, 100 ft., Depto. Lambayeque, Peru

Aug. 16 292 ♂ ^{chromosomes} *Paralomys gerbillus* ^{tail 48 mm} 163-74-18-16-15 14g

~~Aug. 16~~ 293 ^{red iron bridge} ~~red iron bridge~~, 12 mi. ENE Olmos, ^{2000 ft} Depto. Lambayeque, Peru

293 ♀ *Phyllotomid* bat = *Artibeus* 75-0-13-19-12 34g.

Aug. 17 294 ♂ *Myotis* 79-34-8-12-10 3.5g.

295 lizard

2 km. W Porculla Pass, 6500 ft., Depto. ^{Piura} ~~Lambayeque~~, Peru

296 lizard

Aug. 18 297 ♀ *Oryzomys* 10 emb. - parous ^{coll CB Koford} 224-124-25-17-12 29g.

298 ♀ *Marmosa elegans* no emb. ^{coll CB Koford} 236-133-17-18-16 19g.

299 ♀ *Phyllotis andium* 5 emb., 2r, 3l, 8 mm. ^{coll CB Koford} 232-123-25-22-17 38g.

300 ♂ ^{chromosomes} *Oryzomys xantholus* ^{coll CB Koford} long-tailed mouse - jungle type ^{tail 9x14} 298-154-32-21-17 56g.

Piura

2 km. W Porculla Pass, 6500 ft., Depto. Lambayeque, Peru
^{+chromosomes} coll R. Hilborn

- Aug. 18 301 ♀ Akodon boliviensis no embs. 176-72-23-15-12 17g.
(cont.)
Aug. 19 302 ♀ Akodon boliviensis no embs. 162-71-21-15-11 19g.
303 ♂ Phyllotis andinum testes 5x8 216-107-26-20-17 33g.
304 ♀ Phyllotis andinum multiparum 186-102-25-20-15 19g.

21 km. E, 7 km. N Olmos, ^{2300 ft.} Depto. Lambayeque, Peru

305 lizard
honey creeper

306 ♂ ~~small warbler-like bird~~ non-breeding testes < 1mm. 8.8g

307 ♀ honey creeper largest ova 1mm. 8.2g

308 gecko

coll C B Kofuel

Aug. 20 309 ♂ Vermilion flycatcher testes 3mm. 14g.
^{Artibeus} coll R. Hilborn

310 ♀ Phyllostomid bat anal 43mm. 73-0-15-18-12 43g.
^{Artibeus} coll R. Hilborn

311 ♀ Phyllostomid bat 71-0-14-19-13 35g.

Aug. 21 312 ^{4 mi. SSW} ~~Fla~~ Motupe, 400 ft., Depto. Lambayeque, Peru

312 ♂ Phyllostomid bat testes 4x5 ~~70-6~~-10-12-8 11g.

313 ♀ Phyllotis amicus immature 141-80-22-17-14 9.1g.

314 gecko

315 gecko

316 gecko

317 gecko

318 gecko

319 lizard

2 mi. SE Morrope, 100 ft., Depto. Lambayeque, Peru

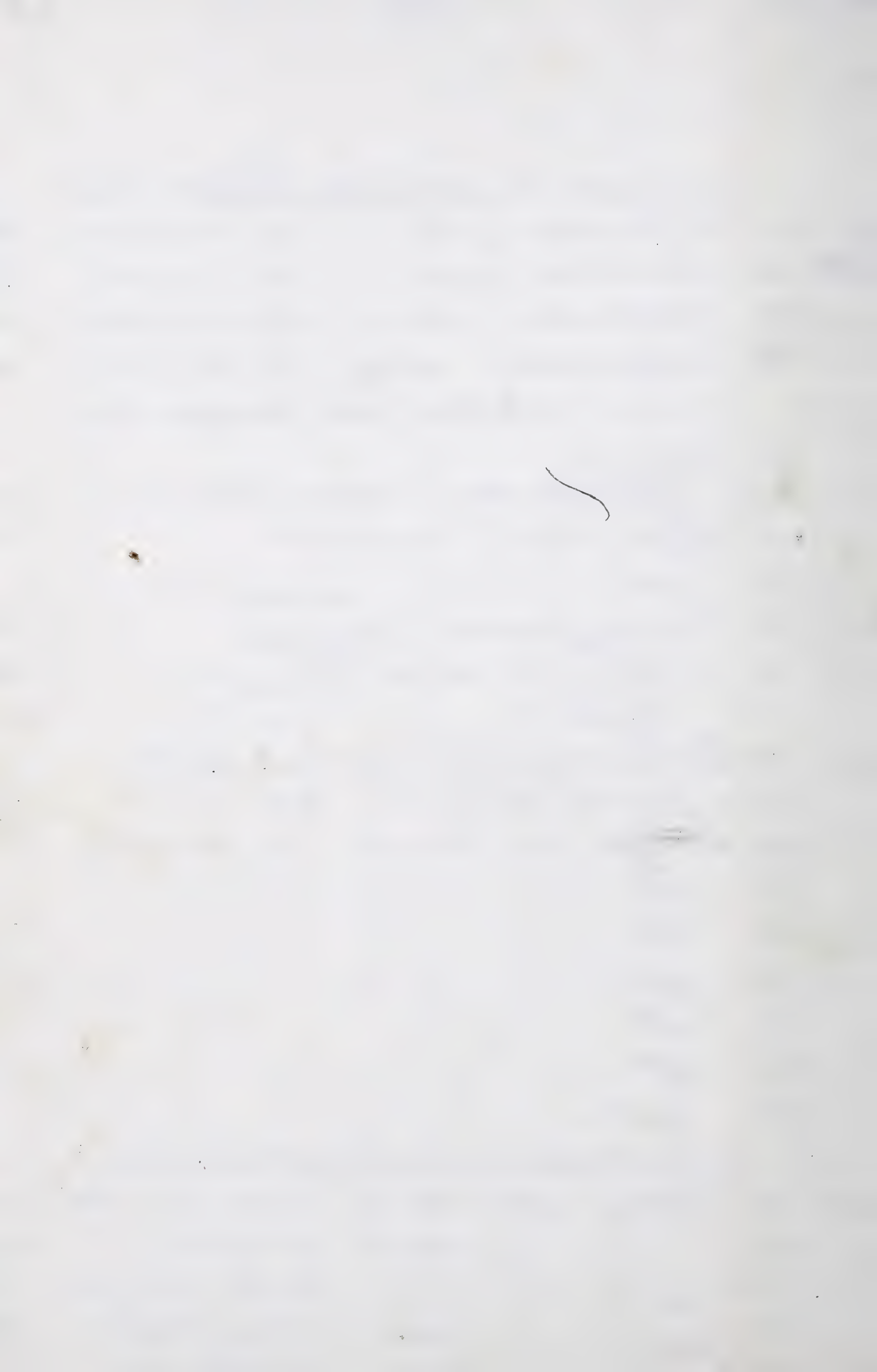
Aug. 22 320 ♂ Paralimys griffithii testes 5x9 172-90-20-17-14 21g.

321 ♂ " " testes 4x9 171-83-21-17-14 18g.

322 ♀ " " 129-61-19-16-12 9g.

323 ♂ alcohol " " immature 139-69-19-16-13 11g.

324 ♀ alcohol " " 115-56-18-14-12 7g.



2 mi. SE Monrope, 1000ft., Depto. Lambayeque, Peru

Aug. 22 (cont.)

gecko

35 mi. WNW Cajamarca, 6000ft., Depto. Cajamarca, Peru

Aug. 23 326 lizard

327 lizard

Aug. 24 328 ♂ Akodon bolivianus testes 6x10mm. 186-81-24-17-12 29g.

329 ♂ Akodon bolivianus testes 2x4mm. 173-76-22-15-11 22g.

Aug. 25 330 ♀ Oryzomys 232-127-24-17-12 27g.

331 ♂ Oryzomys coll C B Koford testes 5x9 258-139-25-18-14 35g.

332 ♀ Oryzomys 215-115-27-19-14 26g.

333 ♂ small Phyllorhynchus sturnira testes 4x5 65-0-11-14-11 16g.

334 ♂ " " sturnira testes 4x6 70-0-11-12-10 17g.

335 ♀ " " sturnira 65-0-10-12-10 18g.

Aug. 26 336 ♂ Oryzomys ^{testes 2x4} longicaudatus (wetter pasture) 188-707-24-15-11 12g.

337 ♀ Oryzomys ^{no emb. - parous} longicaudatus (wetter pasture) 203-116-23-14-11 15g.

338 ♂ Oryzomys testes 6x11 269-146-26-17-11 39g.

339 ♂ Akodon sp. testes 3x5 212-102-27-19-15 21g.

340 ♂ Akodon bolivianus testes 5x8 187-80-23-17-13 27g.

341 ♂ Akodon bolivianus testes 2x4 163-72-22-16-13 20g.

342 ♀ Akodon bolivianus nulliparous 157-70-22-17-12 19g.

10 mi. NW San Miguel, 9000ft., Depto. Cajamarca, Peru

Aug. 27 343 frog (in wet brushy habitat under leaves of similar color)

3 mi. N Ocoten, 1000ft., Depto. ^{Lambayeque} Cajamarca, Peru

Aug. 28 344 lizard [rocky slope with tall cactus]

345 lizard

346 lizard

347 gecko

348 gecko

3 mi. N Oyotún, 1000 ft., Depto. Lambayeque, PeruAug. 28 349
(Cats.)

gecko

350

gecko

351

gecko

352

gecko

353

gecko

Aug. 29 354

lizard (hand-shaker) rocks + brush

5 km. NE Pacasmayo, 2000 ft., Depto. La Libertad, Peru

355

gecko - [dry, barren, rocky hill]

356

gecko

357

gecko

358

gecko

359

gecko

Aug. 30 360

♂ whippoorwill testes 3x5

35g.

361

♀ seedeater ova < 1mm.

20g.

362

♀ *Corynorhiza xantholeuca*

250 - 130 - 31 - 21 - 15

57g.

5 mi. SW Otuzco, 8000 ft., Depto. La Libertad, Peru

Aug. 31

363

♀ *Phyllotis* ^{andium} ~~magister~~ no embryos

263 - 146 - 27 - 25 - 19

47g.

364

♀ *Phyllotis andium* - no embryos.

243 - 125 - 25 - 23 - 18

44g.

365

♂ *Phyllotis andium* testes 5x9

224 - 120 - 25 - 22 - 17

36g.

366

♀ *Phyllotis andium* no emb.

224 - 115 - 24 - 21 - 16

33g.

367

♀ *Akodon boliviensis* no emb.

153 - 67 - 22 - 15 - 10

19g.

368

♀ *Akodon boliviensis* no emb.

154 - 69 - 22 - 17 - 11

21g.

369

♀ *Akodon boliviensis*

167 - 74 - 22 - 16 - 11

20g.

370

lizard

371

lizard

10 mi. WNW Santiago de Chuco, 13000 ft., Depto. La Libertad, Peru

Sept. 1

372

♂ *Phyllotis pictus*

197 - 85 - 26 - 23 - 18

26g.

Nymal Leng
1969

Catalog

19 ~~12~~

- (ent)
Sept. 1
(cont)
- 10 mi. WNW Santiago de Chuco, 13000 ft., Depto. La Libertad, Peru
- 373 ♂ *Phyllotis magister* testes 3x5 209-113-26-22-17 25g.
374 frog [small creek]
375 frog "

- 2 mi. SE ~~Maro~~^{Maro} 1100 ft., Depto. Lambayeque, Peru
(caught Aug. 16 add 4 babies which she ate died Sept. 1)
- Sept. 2 376 ♀ *Paralomys gerbillus* 175-88-21-18-13 17g.

- 15 mi. W Quiruvilca, 11000 ft., Depto. La Libertad, Peru
- 377 ♀ ~~hummingbird~~^{Metallura phoebe} - foraged at night on Eucalyptus bark 8 ft. up 5.7g.
- Sept. 3 5 mi. SW Otuzco, 8000 ft., Depto. La Libertad, Peru
- 378 ♂ *Akodon boliviensis* testes 6x11 187-83-24-16-10 35g.
379 ♀ *Akodon boliviensis* - uterine scars 192-81-23-16-13 28g.
380 ♂ *Phyllotis andium* skull broken 208-108-26-22-17 27g.
381 ♂ ♀ *Phyllotis andium* - multiparous 197-104-26-24-20 24g.
382 ♀ *Phyllotis andium* multiparous 194-105-25-22-18 23g.
383 ♂ *Phyllotis andium* testes 3x4 219-107-26-23-18 32g.
384 ♂ *Phyllotis andium* testes 3x4 207-110-25-22-17 26g.
385 ♂ *Phyllotis andium* testes 3x4 224-120-27-23-17 27g.

- 20 Km. N, 6 Km. W Chancay, 800 ft., Depto. Lima, Peru
- Sept. 4 386 gecko complete skel. only
- Sept. 5 387 ♂ *Lagidium puna* testes 15x21-610-250-80-65-63 ~1 1/2 dk.

- 5 mi. SSW Paracas, Depto. Ica, Peru
- Sept. 6 388 lizard [near salt water inlet]

- 35 miles ENE Nasca, 10500 ft., Depto. Ayacucho, Peru
- Sept. 7 389 ♂ *Phyllotis darwini*^{timatus} testes 2x3 210-116-24-25-20 25g.
Sept. 8 390 ♂ " " " testes 3x5 234-123-26-27-21 42g.
391 ♂ *Phyllotis amicus* testes 2x3 183-98-20-22-19 16g.

- 10 mi. WNW Pucallpa, 13000 ft., Depto. Ayacucho, Peru
- Sept. 9 392 ♀ *Phyllotis darwini*^{posticalis} left uterus w/ 3 scars 207-104-26-26-20 30g.

Myrmal Leong
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Catalog

2048

10 mi. WNW Puzoio, 13000 ft., Depto. Ayacucho, Peru

- Spt. 9 (cont.) 393 ♂ *Calomys ^{sorrells} ducella* tests 2x3 coll. C.B. Koford 151-76-19-18-16 11g.
394 ♀ *Akodon boliviensis* multipara 157-73-20-14-10 16g.
395 lizard
Sept. 10 396 ♂ *Phyllotis ^{pictus} ~~boliviensis~~* testis 6x10 207-90-25-23-19 51g.
397 ♂ " " testis 5x8 203-94-26-24-20 45g.
398 ♂ *Phyllotis ^{darwini posticalis} ~~pictus~~* testis 7x12 255-121-27-27-23 59g.
399 ♂ " " " testis 7x11 218-107-25-26-20 39g.
400 ♂ " " " testis 8x10 241-120-29-29-25 50g.
401 ♀ " " " 10 mm c.v. embryos - 30. 232-116-27-27-23 46g.
402 ♀ " " " ut. scars - no emb. 229-109-26-26-23 43g.
403 ♀ " " " no emb. ut. swollen ut. scars - rt. ut. v. at. 214-106-27-25-21 34g.

~~404~~ 15 mi. WNW Puzoio, 12000 ft., [2 mi. W summit], Depto. Ayacucho, Peru

- Sept. 11 404 ♂ *Phyllotis ^{pictus} ~~boliviensis~~* testis 2x3 coll. C.B. Koford 206-94-27-24-19 39g.
405 ♂ *Phyllotis ^{posticalis} ~~darwini~~* testis 2x3 coll. C.B. Koford 221-120-28-27-22 36g.
406 ♀ *Phyllotis darwini* no emb. all C.B. Koford 209-110-25-25-22 27g.
407 ♀ *Phyllotis ^{posticalis} ~~darwini~~* no emb. coll. C.B. Koford 204-109-26-25-21 26g.
408 ♀ *Phyllotis darwini* no emb. 217-117-27-25-20 28g.
Sept. 12 409 ♂ *Phyllotis ^{sublimus} ~~sp.~~* testes 6x9 171-60-21-20-15 35g.

5 mi. SSW Paracas, Depto. Ica, Peru

Sept. 13 410 lizard

Myrmal Hawes 15 mi. WNW Puzoio, 12000 ft., [2 mi. W summit] Depto. Ayacucho, Peru
caught Sept. 11

- Sept. 22 411 ♂ *Marmosa elegans* testes 6x8 198-107-15-22-18 13.6g

Myrna (Leong) Hawas

1969

Journal

Ecuador

June 26-29

III

Peru

June 30-

Sept 13

Myrval Heug
1969

Journal

1

Quito, ~~Ecuador~~ Pichincha Province, Ecuador

June 26

7:30 am. Arrived at the Quito airport and were met by Fernando Ortiz. The weather is warm, overcast and sprinkling at times. Carol Pearson and I have come here with the primary objective of live-trapping Phyllotis haggardi for chromosome data and study skins. We are staying at Residence Florida, a boarding house 2 blocks from Fernando's apartment.

Fernando drove us to Pomasqui Square and we went up to Pululahua Crater, a huge crater ~~to~~ with a spreading hacienda within it. The flora & fauna is quite diverse and thick. Along some of the rocky slopes and dry washes might be some good Phyllotis habitat. We've seen vultures, hummingbirds, flower-piercers, grosbeaks, hawks, ~~and~~ flycatchers, and many other birds.

12:30 pm. Fernando took us to the hacienda of his friend Esteban Serrano, the Hacienda La Pompa. There is quite a rich variety of plants & trees here. We have made arrangements to return this afternoon and trap in the nearby foothills for Phyllotis. We have 70 large folding Shermans.

M. Leary
1969

Journal

2

June 26

Hacienda La Pompa, Pichincha Province, Ecuador

Fernando's assistant was supposed to pick us up at 4:00pm to bring us here. He was 2 hours late. The sun sets + rises regularly at 6:00 here, so it was getting very dark (and foggy). We had only 40 traps. Esteban Serrano, who's in charge of the hacienda helped us trap. We set out ~~10~~ 10 along a somewhat rocky + sandy slope that had a fair amount of vegetation. 8 were set just below this in an old corn field. Finally, 14 were set along a dry wash nearby. In no case was there any animal sign. We heard owls and whippoorwills. The moon was almost full and the temperature was about 60°F. 8 traps set in house.

June 27

5:30am. We left to check the traps. No success. A Mus musculus was caught in the house. Today we want to try trapping on the slopes of Mt. Pichincha, which is probably rockier + drier than the area around Hacienda La Pompa.

Ante
4:20pm. Fernando was supposed to pick us up at 4:00 to go trapping up on Pichincha. It has been raining fairly hard for the past 1 1/2 hrs., so maybe this has discouraged him.

4:30pm. Fernando and his assistant Pancho arrived here and we drove up a dirt road on Mt. Pichincha. It is still raining, though not as hard as it was earlier. The slopes are

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Journal

3

June 27
(cont.)

3500 m.
~11,000 ft.

quite

Mt. Pichincha, Prov. of Pichincha, ^{quite} Ecuador.

quite verdant, mostly with low growing shrubs and ground vegetation - ferns, etc. Unfortunately the road had a slide before we were even half way up, and so we could go no further in the jeep. Supposedly near the top was rocky habitat that might be suitable for Phyllotis hoggardi. It would have been an hour's walk up to the top, however, so we decided to set traps along the chapparal. We hiked up to the grassy chapparal area and set our traps in 3 lines of about 15 each, plus a line along the road where the sharp bank met the road. All together, 70 folding shermans, baited with rolled oats, were set. The area is quite moist and the vegetation is low and thick. The slopes are also rather steep. No definite animal sign was seen except for a few holes. What appeared to be rabbit droppings were fairly abundant. Fernando says the Eastern slope of Pichincha is much drier. It faces away from the ocean. We saw many birds on our walk up Pichincha. This may have been because it was right after the rains, but the area is good for birds anyway. 4 spp of hummingbird were seen: Buff-legged, Patagona (giant),

Myrnat Henry
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Journal

4

June 27
(cont.)

Utt. Pichincha, ^{3500 m.} Quite, Prov. de Pichincha, Ecuador
one that was all brown below with iridescent
green on the back (copper feathered) ~~and~~ ^{and} the blue-winged.
~~and~~

We also saw
an ~~Antpitta~~ antpitta perched on a shrubby plant.
On our way down we saw a Whippoorwill.

June 28

7:30am We checked the traps. None of the
~~our~~ traps set in the grassy slopes had any mice
except for one, set under a shrub with grass
and low-growing vegetation surrounding it. It
is probably a Phyllotis, although the ears are
not exceptionally large. The fur is woollyish
and a reddish tan color. The tail is long.
This was caught by Carol Pearson. I had
set a line of 22 traps along the road. In the
first four of these were mice. The first 2
had microtine-like animals that resemble
very much Microtus. My guess is that they
are Akodon. The first was caught by a
trap set in a large hole (~1 ft. wide) about
4 feet up on the bank. There were overhanging
rootlets and grasses covering the hole. The
vegetation around was quite thick, with moss
and small ferns, clover-like plant, grasses, and
some little shrubs. The 2nd trap had another
Akodon in it. This was set where the bank
levels off. The vegetation both on the bank &
on the ground was thick, with many grasses and

Myrnat Kemp
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Journal

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Mt. Pichincha, 3500 m., Quito, Prov. de Pichincha, Ecuador
ground vegetation. The next trap held what I
hope to be *Phyllotis*. This was set where the
bank is higher (12-15 ft.) and more bare.
The place where the trap was still had a
good deal of vegetation, mostly grasses and
low shrubs and plants. There was a bunch
of pampas grass overhanging. The 4th trap had
another *Phyllotis*. This was set in a similar
habitat, among the grasses near the edge of
the bank. The other 18 traps had nothing.
The vegetation there wasn't quite as thick
and grassy as the first 4. Generally, the
environment is drier than that right below it.
Above the road is grassy chapparal and below
it is steep forest area.

We saw many birds - cotingas, the antipitta,
many hummingbirds, hawks, doves, siskins,
sparrows, flower piercers, etc.

The weather is overcast and cloudy and somewhat
cool. Saw interaction between hummers and
flower piercers.

At 4:00 p.m. Fernando picked us up and we made
our way back up Mt. Pichincha. The weather
was cloudy and cooling. We drove up to the
road slide and decided to hike up along the
road past where we set traps last night,
and look for habitat like that where The

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June 28
(cont.)

Mt. Pichincha, 3500 m., Quito, Prov. de Pichincha, Ecuador

four mice were found today. We set traps in several places along the road, and ended up with 1 line, separated in about 3 places, of 68 Shermans (apparently 2 traps were lost this morning). We tried to place traps in grassy places at the base of high banks of the road. Some traps were placed on top of the bank, some in holes in the bank, but mostly at the base. As we were leaving (6:00 pm), the temperature was dropping noticeably. The sky was clearing, and the moon is essentially a full one. We plan to return tomorrow morning to collect the traps before we start out to see Cotapaxi.

June 29

6:30 am. We left to check the traps. The morning was pretty warm, but still cloudy. The results were 3 *Phyllotis*, 2 had frozen to death during the night, but 1 young one was still alive. All the mice caught on Mt. Pichincha were on the East facing slope. The live one today was at an elevation of 3600 m., in a grassy, ferny area beneath a bank that is fairly bare except for some moss & overhanging grasses. The bank is about 5 ft. high. The vegetation is dense with grass, clover, and some plants with yellow flowers. A dead *Phyllotis* (MAL #123) was a trap nearby at the same elevation. It was caught beneath a heavily vegetated bank, with

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June 29
(cont)

Mt. Pichincha 3500-3600 m., Quito, Prov. de Pichincha, Ecuador
many overhanging branches of shrub. There were few grasses, but much of the clover-like plant. The vegetation is dense. A Solanum flower plant was present. The 2nd dead Phyllotis ^(MAL#122) was caught at 3500 m. in very dense vegetation. There is a lot of grass and clover. The bank also is heavily vegetated. The smaller of the mice was tawny. The larger had a dark patch ^{on} ~~above~~ ^{big} head, like some of the live ones caught the other night.

The habitat generally has 4 spp. of tree comprising the forest part: Synoxis holli, Siphocampylus gigantea, Oreopanax sp. (a very large, bulky tree), and an Ericacea. The slopes are mostly grassy.

Papa Leon Tree, 150 ft., Depto. Lima, Peru

June 30

We arrived here at about 3:00 pm. The area is hilly desert. We saw some patches of Tillandsia coming S from Lima. At 3:30 pm we started ~~to~~ setting traps in an area close by here, 4 km. ENE Pucusana, 150 ft., Depto. Lima. This is ~~an~~ hilly area with talus slopes. The most abundant vegetation is a greyish cactus. Scattered near rocks were also clover-like plants and an occasional leafy shoot of a monocot (3-5 in. high). There were 3 gullies from our central area. Ray Gilborn had 40 small shermans.

Nymalheng
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June 30
(cont.)

Papa León Tree, 150± ft., Dept. Lima, Peru
Carol Pearson had 32 small shermans, and I had 30 large folding shermans. We each took a gully between 2 hills and made our way up it. The weather was grey and overcast. I set 2 lines of 15 traps each. The first started at the bottom, where there were occasional rock piles or cacti. As I ~~for~~ went up it became progressively rockier and more abundant cactus was growing. Soon the slopes were pure talus with occasional paths leading up it (for goat?). I set traps at intervals of about 20-25 paces, trying to leave the traps along rocks, or near protected places in rocks or cactus where it seemed mice might want to be. No definite sign of mice, but what appeared to be burrows weren't uncommon. The soil is somewhat loamy. Much of it appears to be tiny chunks of dark lichen. Lichen is prevalent on all the rocks. It is usually a darkish color. A few brightish yellows or greens are isolated in some spots. Carol found several fox droppings higher up. Below, in the finer sand, mouse tracks could be seen. Apparently, tracks remain for a long while after they are made. The

June 30
(cont.)

Papa León Tree, 150± ft., Depto. Lima, Peru
wind may blow, but the soil doesn't seem to be too affected by it. The traps were baited with rolled oats.

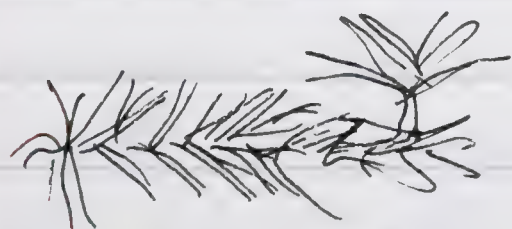
Dr. Pearson looked at the mice we brought back from Ecuador. The 4 mice that I thought to be Phyllotis are probably Thomomys, and inhabitant of wet but brushy areas. The 2 Akodons are probably different species. One of the Thomomys is pregnant and we will save her. The other animals we will take chromosomes from tomorrow.

July 1

at 6:30 am we went out to check the traps we left last night. The weather is very foggy and drizzly (= garúa). The temperature seems to stay pretty constant day and night (63°-64°). There is a very thin layer of moisture covering the area as a result of the fog. I can see now how the clover and lily can grow here. There were no mice in my traps. Ray and Carol caught 2 mice each, all Phyllotis darwini limatus, a male + female each. They were caught on plain sand and also in the rocky area near cactus, all at the lower elevations. Then we drove further south in the area along the same road and arrived at a similar looking area, only inhabited by

July 1
(cont.)

Papa León Tree, 150[±] ft., Depto. Lima, Peru
Tillandsia. One of the differences I noticed which
may account for the Tillandsia here and not at
our trap place. Where the Tillandsia grows there
is none of the small ~~was~~ black, mouse-dropping-sized
lichen covering the ground. Then we drove to
the area S of where we are living. We found
a lot of Tillandsia area. Tillandsia seems to
tend to grow, or at least start growing ~~there~~
in depressions in the ground. Perhaps the seeds
collect there. The plant has no roots. In
some areas, the plants are isolated - There
are some patches of bunches of smaller ones.
Size & color of flower differences suggest that
there are more than 1 species represented in
any one place. In one area, it looked
as though the vegetation had burned over,
and plants were growing out of the burnt
matted parts. These provided good cover
on the ground, and the ground beneath
these mats was dry. The older plants
seem to collapse as they grow. The lower
leaves die:



← 2-3 ft →

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July 1
(cont.)

Papa León Ince, (50[±] ft., Depto. Lima, Peru

Along the highway there is abundant evidence of mice. Their tracks are plainly visible in the fine, moist sand. There seem to be highways along cover of rocks. They probably feed on garbage dumped from cars. Fox tracks are in the same general area. We turned over several rocks, but didn't find any mice beneath them. Then we went to the area east of where we are living, in the rocky canyons. There is a lot of cactus growing there, and ~~all~~ lots of yellow lilies blooming, along with various other kinds of plants. One small area had little green plants that held a layer of moisture on top: T

12:15 pm. We injected 2 Thomomys and the 2 ♂ Phyllotis darwini we caught and will take chromosomes in a couple of hours.

4:00 pm. finished the mice and went to a Tillandsia area, 8 mi. SE of Chilca.

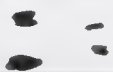
to set traps. We set 68 folding shermans and 67 small shermans. Ray took 39 folding shermans up and over a Tillandsia hill. I took 34 small shermans over around the right side of the hill, Carol set 33 small shermans angled off to the right of me, and Brooks.

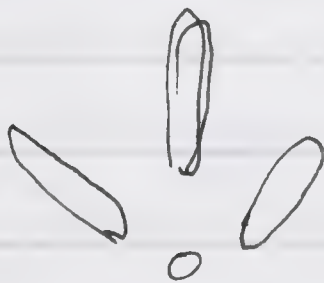
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1969

Journal

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July 1
(cont.)

Papa León Ince, 150±ft., Depto. Lima, Peru.
Pearson set about 30 folding shermans along
the highway (where we saw all the prints
this morning). I set my traps in the
sand near the Tillandsia. The sand
is fine and has no lichen in it. The
Tillandsia strikes are as being somewhat old,
as there is much black rotting of it
beneath the new growth. A plant doesn't
get more than a foot high or so. The
bottom part dies off and is prostrate. I
saw mouse tracks:  and tried to
set them along what appeared to be
pathways. Also I saw fox tracks. Perhaps
they go along areas where they smell mice,
so I tried to set them where I saw fox
tracks. A somewhat strange bird print
was prevalent, too:



These were ~7 inches apart, and at
times looked like the bird had been
scratching. Mice prints were often found near
these tracks.

July 2

Papa León Tree, 150± ft., Depto. Lima, Peru

This morning at 6:30 am we checked the traps we left in the Tellauia last night. We caught 5 mice; 1 Phyllotis darwini and 4 Mus musculus. The Mus were caught in the sand near Tellauia.

I caught 2, Ray caught 1, and the Pearsons caught 1. The Phyllotis was caught by Ray on the top of the hill in a man-made rock pile. All were ear-tagged and released. We then proceeded to look at the area north of where we are staying, and found an area ~~7~~ km. ENE of San Bartolo where on one side of a wide valley is ~~rocks~~ Tellauia on steep rocky slopes and on the other side on sandy slopes. This area is undisturbed and away from the garbage dumps and civilization. Dr. Pearson & Ray set about 65-70 small Shermans in the rocky slope.

3:30 pm. Ray, Carl, & I went back to the area behind our housing development, past the garbage dumps and into the ~~any~~ rocky canyon with lilies & cactus growing in it, ~~87~~ km ENE of Pucallana. ^{200m.} Ray & I set about 60 snap traps among the rocks.

Dr. Pearson and I took Chromosomes of an Akodon and another Thomomys tonight. The chromosome material seems to be coming out OK.

July 3

Papa León Truce, 150± ft., Depto. Lima, Peru

6:00am We drove out to where we had set the snap-traps last night. 20% of mine had been snapped, but I caught nothing. Ray didn't catch anything with his snap traps either, but in 1 large sherman was a small dead Phyllotis darwini.

8:00am We drove out to the potential study area near San Bartolo where Dr. Pearson & Ray had set traps yesterday. They didn't catch anything, but found the skin of a small snake. We drove over to the other side of the valley where the sandy Sillansia slopes are, and set traps out. Ray & I set the small shermans on opposite sides of a ridge, and Carol set 40 large shermans in a semicircle paralleling mine on the slope. This area may be good for studying interaction between geckos and spiders. We found 2 live geckos yesterday. Both they and spiders seem to occupy small holes in the sand. Perhaps the geckos invade the holes & eat the spiders. There are an abundance of these tiny burrows (not more than an inch wide) but nothing seems to be in them. We plan to return soon at night to look around. I found what appear to be box burrows in a dry ravine below the

Miguel Leong
1969

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July 3
(cont)

Papa León Tree, 150± ft., Depto. Lima, Peru
sandy slope where I-trapped. There are many
fox tracks in the ravine. The burrows are
about 1½ - 2 ft. wide and go into the bank.
There are fox tracks in the immediate vicinity
although none appear to go directly into or
come out of the burrow.

The location for the traps has been refigured out to be
5.5 mi. NE of San Bartolo.

3:00 we trapped with snap traps 10 Km ENE, ^{Pucallpa} 250
m. I set about 20 traps in and among
corals of rock piles.

4:00 Dr. Pearson & I ~~put~~ took chromosomes from
the last of the Quits animals, a Thomasomys ♀
(OPP 4651) and an Akodon ♀^(MAL 126) The Thomasomys
was pregnant with ~~38g.~~ a single 3.8 g. fetus
(she was 28 g.). The Thomasomys I found dead
in the trap (MAL 123) also had only one
embryo. Both animals we did today were dehydrated
from lack of water during captivity.

8:00 pm We went out night driving to look
for rodents whose tracks we saw along the road S
of where we are living. At the first place where
we turned off we saw a Phyllotis running,
but could not catch it. We stopped and
walked around the area where we trapped
the second night. Mrs. Pearson saw a Mus
in a hole by the road, and we saw eye-shine

July 3 (cont.)
(cont.)
July 4

Papa León Trece, 150±ft., Depto. Lima, Peru

of the wolf spider, but no other luck tonight.

We went out to pick up the snap traps at 6:00 am. The ones I set among the stone walls caught nothing. Ray caught 1 large Dryomys ^{xanthomys} on flat rocky soil. Carol found pellets of burrowing owls.

8:00 am We went out to our Tillandsia slopes 5-5 mi NE of San Bartolo. There were no mice in any of our traps, and no sign of mice anywhere in this area. I walked along an arroyo near the sandy slope and found several large burrows and some smaller ones. The larger ones are probably deserted fox dens; the feathers on the outside of them indicate occupancy by burrowing owls now. Old fox scats I found have remains of scorpion and some marine shells in them, but no fur. In the arroyo I found an old artillery shell about 5 in long. I shook it out and a small gecko came out. This animal is pinkish with dark + light splotches on it. This is the 2nd gecko to be found in old artillery shells. Perhaps this is a rodentless habitat where the interaction occurs among owls, arthropods, insects, geckos and foxes. Many of the slopes are pure sand with no lichen or Tillandsia growing on it. Some large eagle-like birds are here, and also some hummingbirds were seen in the arroyos. We

Papa León Tree, 150± ft., Depto. Lima, Peru

July 4 (cont.) found the skeleton of a fox. This area will probably not prove to be workable for a study of Phyllotis + Sillausia, since it has been very rare that we have found Phyllotis in Sillausia.

I put the gecko (MAL 127) in alcohol. In the process, its tail came off very easily and jumped + squirmed a lot. Dr. Pearson did measurements of temperature differences. In the open: 19.6° , in shell 21.6° , in shallow sandy gravel 22.4° , and under a rock 21.0° . I think that temperature probably is not the selective force that causes a gecko to seek shelter in an artillery shell, especially in this season where the temperature range is well within 10°F , and probably well within the operating temperature of a gecko. The reason why we have found 2 geckos in these shells is probably that the shells make a nice convenient and impenetrable shelter for these animals.

3:30 We've driven back to the area 5.5 mi NE of San Bartolo and drove past there a kilometer or so. Dr + Mrs. Pearson + Ray set snap traps + small Shermans in the arroyo. I hiked up a ridge. The soil is full of dark lichen and near the top cactus is growing. We plan to stay overnight here tonight and look for geckos, spiders, etc. Up near the top is lots of insect sign + some fox tracks.

Myrmal Long
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Papa León Trece, 150[±] ft., Depto. Lima, Peru

July 4 (cont.)

The military apparently dug a hole for a well here. It is $1\frac{1}{2}$ yds. wide, reinforced with brick. We threw stones down & found it takes $4\frac{1}{2}$ seconds to reach bottom. After a while, a bat fluttered out. It was largish for a microchiropteran and a light grey color. Perhaps it was a Desmodus.

9:00 pm. We are back from gecko hunting. The air temperature is about 14° and the geckos we've caught manage to keep 4 or 5° above this. We caught about 7 of them. We noticed there is very little eye shine in geckos. They tend to freeze if spot-lighted. We heard heavy flutter of wings nearby us but ~~didn't~~ weren't able to identify what flew.

July 5

6:30 am The people of set traps checked them. Dr. Pearson caught 2 Phyllotis ^{amnicus} ~~darwini~~ in the arrays in small shermans. Ray caught 1 small Phyllotis ^{amnicus} in a snap trap. ^{Probably a Leontideus.} No ants are seen during the day, but apparently there are ~~hordes~~ ^{hordes} of tiny little nocturnal ants. Corn meal bait was often wiped clean by them. Ray's mouse had been eaten to a good extent at the ears, eyes, legs and tail by these tiny reddish ants. It appears to me that most of the life in this desert goes on at night. Burrowing owls, bats, insects, ~~rodents~~, foxes, and

Miguel Leon
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Papa León Tree, 150± ft., Depto. Lima, Peru

July 5 (cont.)

The reptilian representatives are all nocturnal. Last night we also saw many moths, some quite large (almost 2 in. long), by their eye shine among the pepper trees in the arroyo. Perhaps one of the keys to this is the apparent fact that the insects are nocturnal. Those in ~~higher~~ ^{higher} trophic levels must also be nocturnal, then. Mrs. Pearson dug up a Droodulus-type lizard from a ~~low~~ shallow hole about an inch wide. It came out of a back door about 6 inches away. It is very cold. It is common in a hot desert like the Sahara to have only nocturnal life, but this is a cold desert. The range of temperature was 54°-68° yesterday, but I think the temperature stayed pretty well somewhere in the middle of those extremes. Perhaps the sunny season is really hot and the animals just remain adapted to activity at night. Further up the valley there is green vegetation. The military in the past has built stone corals here. No sign of mice. There are lots of snails, and their droppings can be seen everywhere. Scorpions are common. We saw a Seed Snipe here. We are keeping the 2 ^{live} Phyllotis annicus in captivity a while, along with the 2 P. darwini. The darwini are much larger & have proportionally larger tails & ears. The annicus are very house-mouse-like and

Papa León Tree, 150[±] ft., Depto. Lima, Peru
July 5 (cont.) differs from *P. darwini* in being very jumpy.
Their tails are very fragile. Dr. Pearson held one
by the middle of the tail and ~~it~~ the skin slipped off.
Ray held ^{the} other by the tip & the skin slipped out.
This afternoon we went through about 25 burrowing owl pellets,
counting scorpion claws & stingers. We found 86 pair
of claws and 50 stingers. Perhaps the owls tend to eat the
scorpion head-on and bite off the stinger part. Also found
are lots of exoskeletons of beetles & other insects and some-
times reptilian bones, probably of geckos. The pellets
are in a matrix of dirt, some with green moss still
on it. Owls probably ingest quite a bit of dirt.
3:30 pm. We drove a short ways south of here and
set traps at the beach 7.0 km. SSE Chiloa.
There were big "highways" of both large & small
rodent tracks, going from weed patches &
patches of *Distichlis* unto the sand. I
set about 25 snap traps in the weeds
and in the sand near vegetation.
Ray set snap traps closer to the ocean, and
Dr. Pearson set 8 small shermans in a
cotton field. Mrs. Pearson found the skull of
Rattus. There are grey gulls, snowy plovers,
some kind of coot, 7-colored bird, and others.
Lizards were very abundant in the vegetation.

July 6

Papa León Ince, 150[±] ft., Depto. Lima, Peru

6:00am We went to the beach to check our traps. I had 18 snap traps out. At the edge of the Distichlis, 3 of my traps had Mus in them and the 4th had been snapped. I caught 2 other Mus by the sand dunes and piles of waste harvest. In Dr. Pearson's 30 small Shermans he caught 16 Mus. Mus. Pearson had 17 shermans out + caught 4 Mus. Ray's 40 snap traps caught 3 mice in a row in the same habitat: a Mus, a Phyllotis ~~darwini~~, and 2 Oryzomys ^{xanthognathus} (large ones).

Last night we went out to the beach to look for crabs. They are about 3 in. across the shell and dig conspicuous holes in the sand. They run about as fast as I walk, but they go sideways. They have eyes that fold down. First they run away, but if pursued and shove on, they dig into the sand. This is done by the feet and then a movement of the body. I found a large jellyfish with a congregation of crabs around it. They all left, except for one, which pulled off piece of the jellyfish and ate them.

This afternoon Ray put up his Oryzomys, Dr. Pearson put up a Mus, and I put up 3 Mus and did chromosomes + skins of 2 others (130, 131).

5:30pm. Carol Ray + I set traps ^{north} ~~south~~ of

July 6 (cont.)

Papa León Inca, 150[±] ft., Depto Lima, Peru
where we trapped the first night. The location is

The area has many old ruins + some low rock walls or house outlines. It is sandy with Tillandsia. We set out all 65 or so of the small Shermans and 40 of the large folding Shermans. There was no mouse sign, but is similar to areas where we have caught a few Phyllotis darwini + Mus musculus. Tomorrow we plan to tag and release any mice we catch there. Then we are going to the mountains around the Rimac Valley for a couple of days.

July 7

2 mi. N Casapalca, 14,400 ft., Depto. Lima, Peru
We have driven up the Rimac Valley to an altitude of about 13,000 ft. We are about 2.5 mi. above Casapalca by road. There are 3 basic habitats. Down in the lower elevation, Phyllotis darwini, Junco is found. In the intermediate altitude (~10-12,000 ft) is Phyllotis andinum, and in the high altiplano is found Phyllotis darwini posticalis, a couple of spp. of Akodon, and maybe Calomys ducillis. Dr. Pearson, Carl, + I trapped for Phyllotis andinum in a brushy rocky slope about ^{13,300} 12,840 ft. high, 2 mi. SW Casapalca, Depto Lima. The principal vegetation is sericea and lupine. I set 40 large Shermans along the bottom of a rocky cliff and in crevices + bushes.

July 8

2 mi. N Casapalca, 14,400 ft., Depto Lima, Peru

6:00am We checked our traps. I caught nothing in my 39 Shermans. Carol caught 1 Phyllotis ~~darwini~~ andinum in the same type of habitat as I trapped in. Dr. Pearson caught 7 mice in a rockier place than mine, with the same lupine + Senecio. He caught 2 Calomys sorellus, 4 Phyllotis andinum, + 1 Phyllotis darwini posticalis. Ray trapped at higher elevation, where we are camped (>14,000). In rocky bunchgrass, he caught 1 dead Phyllotis darwini posticalis, 1 Creomys jelskii, 2 Calomys dueilla, and 2 Calomys sorellus. Apparently, then, Pearson, Carol and I were trapping in the range overlap of Phyllotis darwini posticalis and Phyllotis andinum, while Ray was trapping in pure P. darwini posticalis territory. Last night it was well below 0°C , and a wind was blowing. This morning it was -4°C , and the abundance of frost on the ground indicates moisture. Where we trapped at ^{13,300}~~12,840~~ ft., it was less windy and warmer. The slopes are steeper with less grass and more chaparral. The locality here is 2 mi. N Casapalca, 14,400 ft. We will take chromosomes from 10 of the line mice ~~too~~ today.

4:30 pm. OPP, Ray, + I set about 35 small Shermans + 30 large folding Shermans about 100 ft. up the road from where we trapped last night. Dr. Pearson set his folding Shermans along rock walls + bunch grass on the north-facing slope (as was last night's slope). Ray trapped

July 8 (cont.) 2 mi. N Casapalca, 14,400 ft., Depto Lima, Peru
in talus and bunch grass, and I trapped up
a rocky, bunch grassy, + bushy gully, where
soft cementish sludge had poured over from the
mining groy on above us. I saw lots of good
places for mice under rocks and around the
bunch grass and along the bottoms of the sides of
the gully. I found a mummified baby bird in
a small slit (4 in x 2 in) in the side of the
gully. Some of the other crevices had bird
droppings. Some mouse droppings were seen, too.
The locality will again be 2 mi. SW Casapalca, 13,300 ft.,
Depto. Lima, Peru. Pearson and I will do the last
of the mice caught last night tonight.

July 9 We broke camp and checked our traps. Carol had set 15
small Shermans and 12 snap traps in a repeat of Ray's
last line. She caught 1 Phyllotis darwini postcalis
in a snap trap. Pearson + I caught nothing in
our lines, but Ray caught 8 animals: 4 P. darwini
postcalis, 3 and 4 Calomys sorellus (1 dead).
This is just 100 yds. up from where we had trapped
the night, yet the habitat was much rockier
with mostly bunch grass instead of lupine + Senecio.
Ray's slope was very rocky.

The plan now is to do a study of Tellamnia and Aras
at the locality 8 mi. SE Chilca. We will set up
grids tomorrow and do density studies of wolf
spiders, too.

July 9
(Cont.)

Papa Leon Tree, 150[±] ft., Dept. Lima, Peru
Carol and I set a line of 28 small Shermans
up the top half of a rocky cactus hill 4 mi. ENE
Pucallpa (locality of our first night's trapping here).
We saw² bats flying around and heard what
sounded like the high whistle or scree of a hawk.
Pearson, Ray, & I took chromosomes of the 3 Calomys
caught this morning.

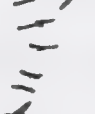
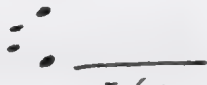
July 10


6:30 am. We picked up the traps we set and found
a Phyllotis annuus in a trap near the top of the
slope in rock and cactus. Previously we had
found P. darwini on the lower slopes.
This morning we set out a grid on the
study area. We put out 144 stakes,
50 feet apart in an area 600 ft x 600 ft.
to include a hill and a slightly level
part adjacent to it. The Tillandsia
is fairly thick and old here. We
will set about 72 traps (alternating
trap posts) for 4 nights to get some
idea of home ranges.

4:30 pm. Pearson & Ray set ~~the~~ small Shermans at
1/2 the posts in the grid. I checked an
adjacent slope for mouse sign and found
tracks in the soft sand. I got the idea that
the mice avoid going on the Tillandsia mats
because the tracks seem to go around them.
I found both large & small tracks, and old

July 10
(Cont.)

Papa León Tree, 150+ ft., Depto. Lima, Peru

grey herbivore droppings the size of gopher droppings. The larger tracks were:  this size, and had typical mouse locomotion, leaving tracks like:  \rightarrow

There were fox tracks and also tracks of the bird Boninus, with large bird droppings . The small prints seemed more abundant on the lower part of the slope while the large ones were more evident in the intermediate level. Towards the top, where little Tillandsia grew, I found few tracks, but this was rockier soil and perhaps tracks don't show up as well. Maybe the mice are active under the Tillandsia mats. This whole area seems to have old Tillandsia with a lot of matting. The plan is to put a Calhoun line through this area of fairly lush Tillandsia. Tonight we observed various captive species of Phyllotis. There is a remarkable contrast in behaviors. All the P. darwini (limatus + posticalis) are much more docile, while the P. anicus are jumpy and nervous. The high altitude P. darwini posticalis also have not built nests whereas the others have. Plans for the study area are soil samples (seed core, floatation, etc.), arthropod censusing, point samples, Calhoun lines, etc.

July 11
~~July 10~~

Papa León Tree, 150⁺ ft., Depto. Lima, Peru

7:00am. checked the traps. We caught & tagged 7 Mus musculus. Many were young animal (small males & females with vagina closed). They seem to have been mostly on the ~~the~~ lower part of the slopes, where the sand tend to be finer and more open spaces available. At the top, a Phyllotis amicus was caught, just 25 ft. from where we had previously caught & released what we thought was a P. darwini. Upon tagging and release, the amicus ran over to the rock pile where the darwini had been caught (C19). Maybe the first one was misidentified. The grid looks roughly like this, with 50 ft. between

strategies	i ₁₂	j ₁₂	k ₁₂	d ₁₂	e ₁₂	f ₁₂	g ₁₂	h ₁₂	i ₁₂	j ₁₂	k ₁₂	l ₁₂
	a ₁₁	b ₁₁	c ₁₁	d ₁₁	e ₁₁	f ₁₁	g ₁₁	h ₁₁	i ₁₁	j ₁₁	k ₁₁	l ₁₁
	a ₁₀	b ₁₀	c ₁₀	d ₁₀	e ₁₀	f ₁₀	g ₁₀	h ₁₀	i ₁₀	j ₁₀	k ₁₀	l ₁₀
	a ₉	b ₉	c ₉	d ₉	e ₉	f ₉	g ₉	h ₉	i ₉	j ₉	k ₉	l ₉
	a ₈	b ₈	c ₈	d ₈	e ₈	f ₈	g ₈	h ₈	i ₈	j ₈	k ₈	l ₈
	a ₇	b ₇	c ₇	d ₇	e ₇	f ₇	g ₇	h ₇	i ₇	j ₇	k ₇	l ₇
	a ₆	b ₆	c ₆	d ₆	e ₆	f ₆	g ₆	h ₆	i ₆	j ₆	k ₆	l ₆
	a ₅	b ₅	c ₅	d ₅	e ₅	f ₅	g ₅	h ₅	i ₅	j ₅	k ₅	l ₅
	a ₄	b ₄	c ₄	d ₄	e ₄	f ₄	g ₄	h ₄	i ₄	j ₄	k ₄	l ₄
	a ₃	b ₃	c ₃	d ₃	e ₃	f ₃	g ₃	h ₃	i ₃	j ₃	k ₃	l ₃
	a ₂	b ₂	c ₂	d ₂	e ₂	f ₂	g ₂	h ₂	i ₂	j ₂	k ₂	l ₂
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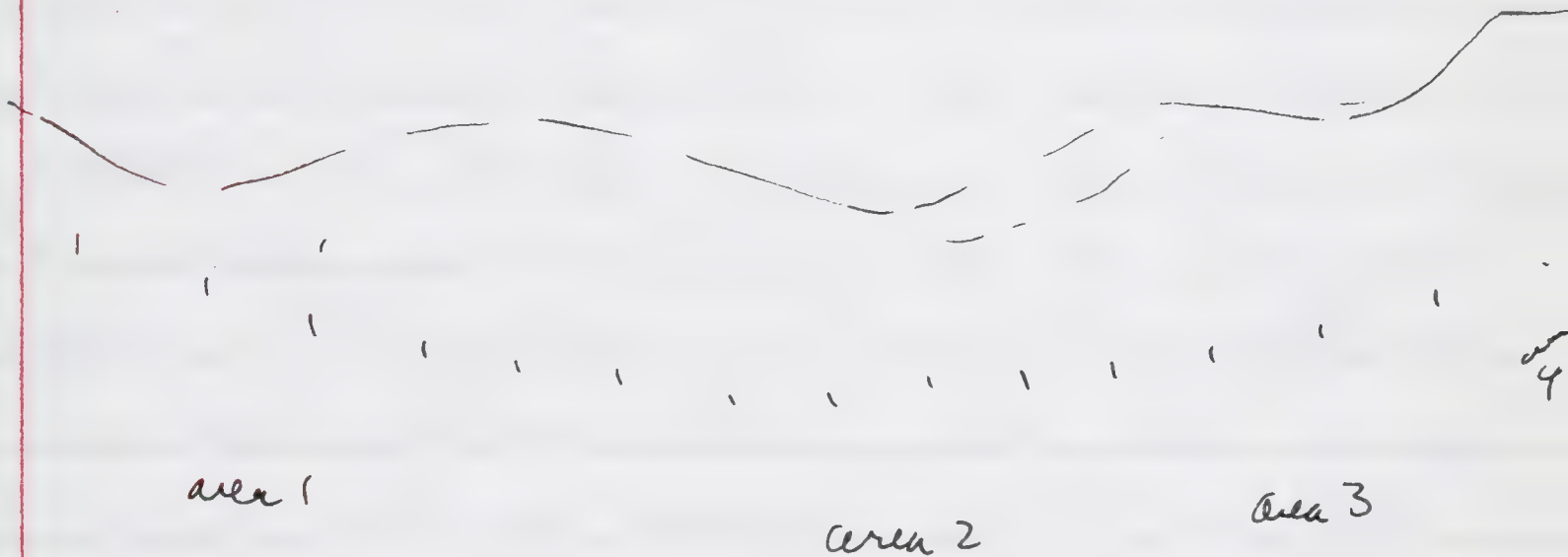
slope

road

Papa León Ince, 150 ± ft., Depto. Lima, Peru

July 11

We put out stakes for a Calhoun line in adjacent slopes to the study area. This area has many prints, both of mice & foxes, as well as birds. We put out 20 stakes, 20 yds apart in a more or less straight line across 4 faces of the slopes



area 2 has the most Tellansia. In area 4 the Tellansia is sparser and the ground sandy. This afternoon we will set 3 traps at each station. This afternoon I took 50 snap traps and set 3 within 6 ft. of the first 10 and 2 within 6 ft. of the last 10. Pearson & Ray set traps at the places that didn't have traps last night. They took point samples at $\frac{1}{2}$ the stake on the grid by pointing a long stick due E and dropping a line down & seeing what it hit. The area is apparently covered by 8% by live Tellansia & 25% by dead Tellansia.

Papa Leon Ince, 150 ± ft., Depto. Lima, Peru

July 11 (cont.)

It was windy when I set my traps. I used oatmeal, but discovered it tasted & smelled very strongly of kerosene. Perhaps it will blow away, or maybe the smell will keep potential takers away. I took 3 core samples, also, one from under Tillandsia, one beside it, and 1 about a yard away from Tillandsia. In the lily field today I saw my first South American Cender. It was large & black with a white collar. Its wings were separated at the tips. Also there were house wrens & swallows and what looked to me like ground doves. Last night a mouse must have gotten under the hood of the truck where the skulls were hanging. 4 of the skulls are missing & just their togs remain (MAL 138, RH 15, 16, and CP 5).

July 12

We went to our study area at 7:00 am. I checked my Calhoun line and found only 1 Mus at stake #15. This was in a bare sandy part in between some Tillandsia. Stomach contents & skull will be kept (MAL 139). Dr. Pearson & Ray checked their stationed traps and got 11 mice, about 5 of the recaptures. Some of the recaptures were as much as 6 stations away from their initial capture. The Phyllotis darwini that was caught on top of the hill was recaptured at the bottom. It is a darwini, and upon release scampered back up the hill to the rocky area, like

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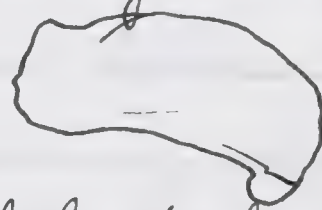
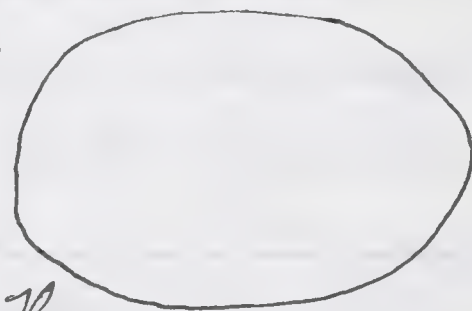
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Papa León Tree, 150[±] ft., Depto. Lima, Peru
July 12 (cont.)

The amicus did yesterday. I counted the number of live Tillandsia in 3 of the squares. In one of the more dense plots (diagonal D8-E7) were 1272 plants, in another (B7-C8) were 1179. In a relatively sparse square (D7-E6) were 652 plants. I would say that an average for all the plots is 900-1000 plants. Dr. Pearson & Ray finished the point sampling. I left my traps out and added corn meal to the bait.

3:30 pm Went back to the study area. We bought regular small mouse traps to add to my Calhoun line. I baited them with cheese and also added cheese to one of the three traps at the other stakes. I found a bird nest near stake #7. There were 2 white eggs in it:

each with a greyish section that looked like it came from the inside. The eggs were cold. The nest itself consisted of large chunky bird droppings, ^{sull} greenish + whitish mixed. There were at the borders of the nest, which was on a large patch of dead Tillandsia about 3' x 4ft. The nest was about 6 inches in diameter. There were some of the large curly droppings next to it, the ones we have been associating with the footprints we




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July 12 (cont.)

Papa Leon Tree, $150 \pm$ ft., Depto. Lima, Peru
have been associating with Burhenus. I also
noted a Tillandsia plant which had a cluster
of seeds broken off and the empty shells below
it . There were mouse prints
(probably Mus - they were very small) right
around it. A trap from stations 9 and 10 was
missing, and I can't understand how. Pearson +
Ray set out the live traps again on the grid.
I did a count of the number of Tillandsia
plants which appeared to have been grazed
upon. The grazed ones usually ~~were~~ had
leaves cut off from the tender shoot part in
the middle. I took a 100ft. length of
string and laid a straight line across
the Tillandsia. Then for every live plant the
string touched I noted whether it was grazed
or ungrazed. I only had time to do this twice.
The results were $3/19$ grazed and $6/24$ grazed.
This was done in the same area where I counted
the number of plants. I saw a sparrow hawk fly
overhead. From point samples we have determined
that about 7.6% of the area is covered by live
Tillandsia and 29.1% by dead Tillandsia.
Checked the traps this morning. Nothing in my
Calhoun line. I don't understand. There
are prints all over. Perhaps Mus is too
light on these rusty traps. 4 were sprung

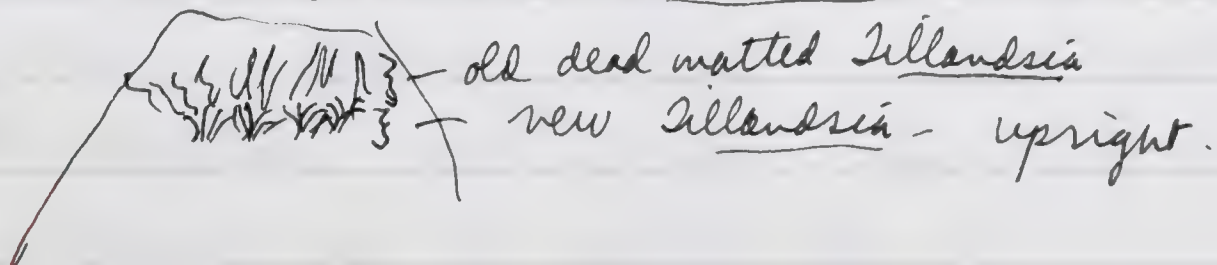
July 13

July 13
(cont.)

Papa Leon Ince, (50[±] ft., Depto. Lima, Peru
and the bait stolen. The traps on the grid caught
12 mice, with 7 of them recaptures. I counted
Zellandsia on some of the sparser-appearing
squares. The least number in any square
was 15. The range was from 15 to about 250.
We are trying to find a good method of finding
all the invertebrates under Zellandsia plants
to get a good idea of the biomass of the
area. At 1:00 pm Ray and I explored a
dirt road that heads NE from Chilca.
~~At~~ We took it 20 miles back. The hills
around were rocky and barren. The
whole valley was a dry river bed, very
dry and dusty. The road went by a
series of haciendas, separated by
several kilometers.

4:00 pm. We went back to the study area and
Pearson + Ray set out the small Shermans
again. I checked my snap traps. One
had the trigger depressed, but the rusty
spring was still keeping the trap from
snapping. I fixed it and reset it.

Zellandsia tends to grow in rows across
the hill. The new Zellandsia is lowermost:



July 13
(cont.)Papa León Ince, 150±ft., Depto. Lima, Peru

Probably a new Zillandsia bifurcates as it grows, the gravity causing it to become prostrate as it dies, so that the new growth is down the hill. Continued bifurcation + branching would then explain the rows. Dr. Pearson is doing food preference observations & experimentation with the captured mice. There is such a big difference between Phyllotis amicus and darwini. Amicus is always moving and very active and quick, while darwini is slow-moving and tends to just sit there. Yet in the study area, there are both species, living together in a niche that doesn't seem able to be subdivided. Why is there such a behavior difference? Perhaps it is because we are near the northern edge of the species range of darwini and the southern edge of amicus. In their respective ranges the habitat + niche are probably greatly different.

July 14

Went to check traps again this morning. Nothing in the snap traps. I collected them, as last night was the third and final night of trapping for that Calhoun line. Total catch was only one mouse. Catch on the grid was 13 mice, 12 of them recaptures. Tonight we will set both shermans and snap traps at all the stations in an attempt to get all the

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July 14 (cont.)

Papa León Tree, $150 \pm$ ft., Depto. Lima, Peru
vice for specimens + stomach samples.
Pearson and I took pictures of Tillandsia and
animal tracks around the Tillandsia. In
one setting we got prints of 3-toed bird,
4-toed birds, 2 sizes of mouse, and fox tracks.
We collected more insect samples from under
Tillandsia, but still have not found a good
method of getting everything.

1:30 Went back to the study area. I set 4 fox
traps and Ray set four. These were placed around
the periphery of the area, in hopes of protecting
the bodies of the mice caught in snap traps from
the foxes. Previously, the shermans with mice in
them have been worried by foxes, and on occasions
the trap is at the bottom of a big hole dug by
the fox. More insect samples were taken. Snap
traps and live traps were placed in alternate
positions, but were run out of snap traps, so
the rows G through L of rows 10 and ~~11~~ 11
and all of row 12 are missing snap traps
at every other position. The fox traps were
baited with beef from our stew. I took pictures
of the study area from across the road and
on top of an adjacent hill. Ray took temperatures
on the area. Carol found a weevil with its snout tube
in a Tillandsia blossom.

July 15

Papa León Tree, 150± ft., Depto. Lima, Peru

Went out to the study area at 6:30 am. Nothing in the fox traps. One set had the bait stolen from the other side of the Tillandsia plants. Another had the bait untouched but the trap sprung. A third had the trap sprung and the bait half eaten. In the traps on the grid we caught a total of 16 mice, only 3 of which were in the snap traps. Another snap trap near the rock pile had the hind foot of a Phyllotis in it. We killed all the mice for skulls, reproductive data, and stomach contents of the snapped mice. Apparently the mice get trap happy, because everyday there is an increase of capture. This time there were 4 untagged. I checked the three rat traps I put out — no success. Then we counted macro-invertebrates under Tillandsia in a measured area. All traps were collected. Tonight will look for spiders on the area, and tomorrow we will go to the Loma to hunt viscacha.

3:30 pm Carl and I walked along the beach ^(Km 74) a little north of the beach where we trapped the mice. There are rocky cliffs here, and an abundance of large rat-size tracks going along the beach and along the bottom edges of the cliffs. These often lead to holes in sand dug into the cliffs. We found 2 porpoise skulls, one of

Papa Leon Tree, 150 ± ft., Depto. Lima, Peru

July 15 (cont.)

which had several vertebrae connected. Carcasses of gulls, pelican, cormorant + boobies were on the beach, as well as jellyfish. Tracks of a pelican, gulls, and snowy plovers were seen.

July 16

We picked up Jorge Reyes and his friend Andres at 8:30 am. and went with them to the Lomas, 20 km. E Lima, 1000 ft., Depto. Lima, Peru.

It is a dirt, rocky road up a narrow canyon with steep rocky sides on which was a relatively rich or lush vegetation. Lilies, a broadish nettle-like plant, and some other leafy vegetation grow, but no grasses were there. Pearson went off with Jorge + Andre. ^{to hunt viscacha} I climbed up to the top of the slope and saw many possible shelters for viscacha and found some old viscacha droppings. The slopes are talus slopes and go up into the fog. ^{with Pearson} ~~He~~ caught a gecko along the dirt road, under a rock. There were flocks of little brown birds that flew noisily from cliff to cliff. No viscachas. There are several sheep + goat-herding families in the area. The Loma zone is passed out of rather quickly and the canyon becomes dry + rocky with cactos growing.

4:00 am. We went out to the beach 7 km. SSE Chilca and I set a Calhoun line through the old cotton field, 20 stations, 3 traps at each station. The

July 16 (cont.)

Papa León Tree, 150 ± ft., Depto. Lima, Peru
purpose of this is to compare catches and get data on breeding and age. Tonight I put up my first bird, ~~as~~ a *Saltator albicollis* ♀ (MAL 147). Dr.

Davis caught 3 in a net and left them at an doorstep.

July 17

Checked our traps this morning. All together in the Calhoun line I caught 25 mice and 2 tails. At 4 stations all these traps had mice. 23 of the mice were Mus, and 2 were *Oryzomys xanthodorus* (MAL 171, 172). Most of the specimens were eaten partly by ants or other mice. A couple of the traps had the string chewed through, and at 2 stations all these traps were sprung and empty. Ray caught 3 *Phyllotis anicius* and 1 Mus in the 40 shermans he put out along the beach. We went to the study area where we continued sampling macro invertebrates under *Tillandsia*. Ray and I came back. I took reproductive data, measurements, and skull onlys from the Mus, put up the 2 *Oryzomys*. Then we put up ~~3~~ the 3 *P. anicius* and took their chromosomes. The live Mus will be used for feeding experiments. The 3 Pearsons spent the day at the study area. At 3:30 I dropped Ray off at the beach near the cliffs so he could set 40 live traps again. I then went to my Calhoun line to check it and rebait. On the way out (I was to pick up the Pearsons, then

July 17
(cont.)

Papa León Tree, 150± ft., Depto. Lima, Peru
go back for Ray) I got stuck in the sand with the truck, but was soon aided by 4 Peruvians who pushed me out.

July 18

Checked my Calhoun line. This time I got 9 Mus, 1 tail, and 2 Oryzomys. The majority of the traps were sprung and empty. I suspect that the Oryzomys are not being successfully caught by the museum specials. The 2 I caught — one by the neck and 1 by a front foot — were still alive. We will try to get chromosomes from them. Ray caught 7 Mus in his line. We went to the study area to do more insect counts. It seems there is differential abundance of types of insects on the newer W slope than on the E slope. There are many more silverfish on the E slope, whereas on the W slope, where the Tillandsia isn't as buried, most of the ~~mus~~ invertebrates are spiders + crickets.

3:30 pm We went back to the study area with the intention of staying there overnight. We did more invertebrate samples on the E side to get an average biomass for silverfish. Ray & I set out steel traps — he had 2 stations & I had four — they were baited with mouse carcasses + beef. In the evening we went and counted spider eye shine in squares in which the number of Tillandsia plants had been counted. D. Pearson

July 18 (cont) Papa León Trece, 150± ft., Depto. Lima, Peru
had a head lamp and consistently counted more than any of us with flashlight, so the counts are not accurate.

July 19
6:00am - saw doves flying overhead. Checked my fox traps — no success. Perhaps our being there last night kept the foxes away. There was no sign of any being there. I drove over to the beach to collect my Calhoun line. Total catch was 8 Mus. They seem to like the light green vine-like low-growing plants with white small blossoms. At 2 stations there were 2 mice. In many stations the trap had been sprung & empty.

3:30 pm - We spent the rest of the morning working with the Mus. Most were made into skull cups. Dr. Pearson put one up. In the afternoon we went to the museum and ruins at Pachacamac.

4:30 pm. We went to the first Trapping area (rocks & cactus 4 km ENE Pacusana). I set out 30 small shermans up the right hand gully in rocks & cactus & some sand. Ray set out about the same number in another gully. Dr. Pearson set out 2 fox traps and about 7 small shermans. We are trying to catch Phyllotis darwini, to bring back alive.

Tomorrow we will collect the traps and then head for the mountains. We plan to go

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July 19
(cont.)

Papa León Trice, 150[±] ft., Depto. Lima, Peru
up the Cañete valley, which is about 60 miles
south of here, then head ~~near~~ than 60 miles
inland on a dirt road. It will be for
general collecting and to see how far south
amicus goes (i.e. whether it goes down that far)
and also to get Marmosa. No museum expedition
has ~~gone~~ trapped in that valley before.

July 20

6:00am Pearson, Ray, & I checked our traps. I
caught a Phyllotis darwini and a Phyllotis amicus
within 100 ft. of each other in the lower part
of the gully in traps set next to rocks near
cactus. Neither Pearson or Ray caught anything.
I also caught a lizard (MAL 192) near the same
place. The Phyllotis will be kept alive.

7:00am Left Papa León for the mountains. Past
Mala we came across a dead fox on the side
of the road. It must have been killed just
last night. Dr. Pearson took measurements and
we are saving the skull. It is a small Onychomys.
From Cañete we took the road inland towards
Yungay. The going is slow because the road
is rocky & somewhat winding. It goes up
very slowly through a lush valley surrounded
by pretty barren & steep mountains. The
Cañete River is clear and fast flowing. Most
of the road is populated. ~~and~~ The lower
slopes are irrigated — banana & papaya trees are

July 20
(cont.)

Papa León Tree, 150± ft, Depto. Lima, Peru
common. As we went up we saw condors,
doves, swifts, flycatchers, and a Torrid
Duck that was floating down the rapids.

The temperature is warm and the sky clear.

^{5 mi. E}
~~10 km S~~ Yungos, 8000 ft, Depto. Lima, Peru

3:30 we arrived here and set up camp. ~~We~~
are about 1½ hours past Callanca. We
are probably fairly close to Yungos. We
are camping by the river.

6:00 pm. We've all set traps. Ray & I split
the small shermans. I set a line up a
rocky talus slope that has a lot of
vegetation, including scots broom, some dry
grasses, large cactus, and a few trees.
It tends mainly to be brushy and dry.

There are bats flying all around, feeding on
gnats. They are ~~small-medium~~ and make a
fairly high pitched squeaking noise.

July 21

6:00 am. Checked my trap line. I caught 3 animals,
a Phyllotis andinum, a Phyllotis amicus, and a
Marmosa. One of the Phyllotis was caught along the
base of a rock wall, the other in some crumbly
rocky pile, and I believe the Marmosa was
caught in a trap placed in a hole in the rock
wall. It is very small and not very active, although
after I had it in my breast pocket a while it became
more active and managed to climb out. Dr. Pearson

July 21
(cont.)

5 mi. E
~~10 km. S~~ Yauyos, ⁹⁰⁰⁰ ~~8000~~ ft., Depto. Lima, Peru
caught 6 animals in his snap traps — 5 Phyllotis
anvicus, and one unknown — perhaps darwini. Carol
caught 3 dead anvicus and a live andium. Ray
caught 2 mice — a darwini and an anvicus.
Mrs. Pearson caught 3 dead Oryzomys — like mice
and 2 live, what appear to be long-tailed anvicus.
I injected the 2 andium, a long-tailed anvicus and
a darwini. The Marmosa is somewhat dopey, and
not fast moving. It has a prehensile tail and
ears that are somewhat curled or folded.
We set up a mist net on the other side of the
river in a meadow. So far we've gotten 1 flycatcher.
It was warm and windy last night, and today the
weather is sunny and windy.
3:30 pm Carol and Ray are going to stay around camp
and trap here with a box of small Sherman, some
snap traps, and 40 large Shermans. Dr. Pearson,
Mrs. Pearson and I are going up the canyon towards
Yauyos to set traps. The valley becomes a deep,
steep gorge further up as the road passes over a
bridge to the right of the river. The Indians
have irrigated & cultivated many of the very
steep sides. About 10 miles up the road
we parked. There was a steep brushy
hillside that had tier upon tier of rock
walls to hold level the soil for cultivation.
The rock walls were in both lush and somewhat

July 21
(cont.)

5 mi. E
~~10 km. S~~ Yauyos, ⁹⁰⁰⁰ ~~8000~~ ft., Dept. Lima, Peru
dry, brushy slopes. Dr. Pearson took about
40 snap traps up to the higher tiers. Mrs.
Pearson set about 27 large Shermans below
that, and I took the dry area to the right
of that and set 30 ~~to~~ small Shermans along
the rock walls near holes. We are hoping to
get Phyllotis magister. Tonight is clear with
scattered clouds, moonlight, warm, and windy.

July 22

6:00 am Dr + Mrs Pearson + I drove up to check our
traps. Mrs Pearson caught nothing, Dr. Pearson
caught 1 dead Phyllotis magister, and I caught
another Marmosa and a live P. magister. The
magister is important because the closest other
specimens caught have been 400 mi. south and
200 miles north. Dr. Pearson calls these subspecies,
so a connection (none have been found in the
Rimac Valley) here is important. Carol caught
nothing near camp, and Ray caught 5 amicius
(4 alive) and 1 dead Cryzomys. Last night we
had some luck with the mist nets. After dusk
we found a medium-sized ~~Phyllotis~~ Phyllostomid
bat in the net hung across a meadow. In
the net hung across the river there was a
small bat, probably of a different species caught,
but it freed itself before we were able to
get to it. During the night another Phyllostomid
was caught. It looks different from the first.

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July 22
(cont.)

5 mi. E Yauyos, 9000 ft., Dept. Lima, Peru

In the morning we got a Patagonas gigas (giant hummingbird) in the net hung across the river, near the bank. At ~~4:30 pm~~ we injected 4:30 pm. We are on our way back to Papa León Tree and are now injecting the 2 bats & the Phyllotis magister and Marmosa I caught this morning. We have discovered that we were not on the road to Yauyos like we thought we were. The road had branched off to the left, but we had kept right, along the river about $1\frac{1}{2}$ hours from the junction at the Cañete River. We will get new locality and altitude data.

Location for last night's trap-site: 8 mi. NE Yauyos, 9500 ft.

July 23

Papa León Tree, 1500 ± ft., Dept. Lima, Peru

We spent the morning skinning mice & taking chromosomes of 3 of them from the Cañete valley trip. Our results haven't been too good. Perhaps the colchicine is no good. The spreads we do get are pretty highly contracted, and they are few and far between. We are using double concentration of colchicine & generous in the amount.

2:30. Card, Mrs. Pearson & I went to the north part of the beach to set traps to get Oryzomys live. I was setting large Shermans in a ditch next to a sand hummock perpendicular to the water line. ~~In the~~ The

July 23
(cont.)

Papa Leon Tree, 150± ft., Dept. Lima, Peru
 vegetation was almost pure Distichlis, with
 varying densities. In the process of setting the traps
 I saw, or rather flushed 6 mice! Apparently
 they are active at 3:00 in the afternoon. Most
 were at the edge of the vegetation & ran, jumping
 & leaping, into the dense Distichlis. In the
 sand around the vegetation were holes with
 mouse prints all around. The holes went down
 at a slant. I recognized a couple of the mice
 as Mus. One was a large one, perhaps an
Oryzomys or a Rattus. One Phyllotis-sized
 animal was dark with a whitish ventral.
 Carl set about 30 small Shermans in the
Salicornia around ponds, & Mrs. Pearson
 set about 20 traps in some Distichlis &
 near the cliffs where Ray had trapped before.
 We had the mist net up in the backyard today and
 caught 2 Zonotrichia capensis, a vermillion flycatcher,
Spinus (goldfinch), a hummingbird (Amazilia,
~~Amazilia~~) and a dove (Eupula).

July 24

Spent the day in Lima today. This morning at
 5:45 Carl, Mrs. Pearson & I checked our traps.
 I had Mus in 7 traps. Four of these traps, set
 out where the Distichlis is thicker, had 2 mice
 in each. Most of the other traps had the bait
 all gone & had dirt & mouse droppings in them,
 indicating that a Mus had been there. Apparently,

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July 24
(cont.)

Papa León Tree, 150 ± ft., Depto. Lima, Peru
one Mus is generally not heavy enough to trigger the large Shermans. Obviously the mice are all over the area, and apparently active both day + night. ~~Carl~~ None of the traps I set near Salicornia caught mice, although a couple had bait gone. Carl caught 10 Mus + Mus. Pearson caught 1.

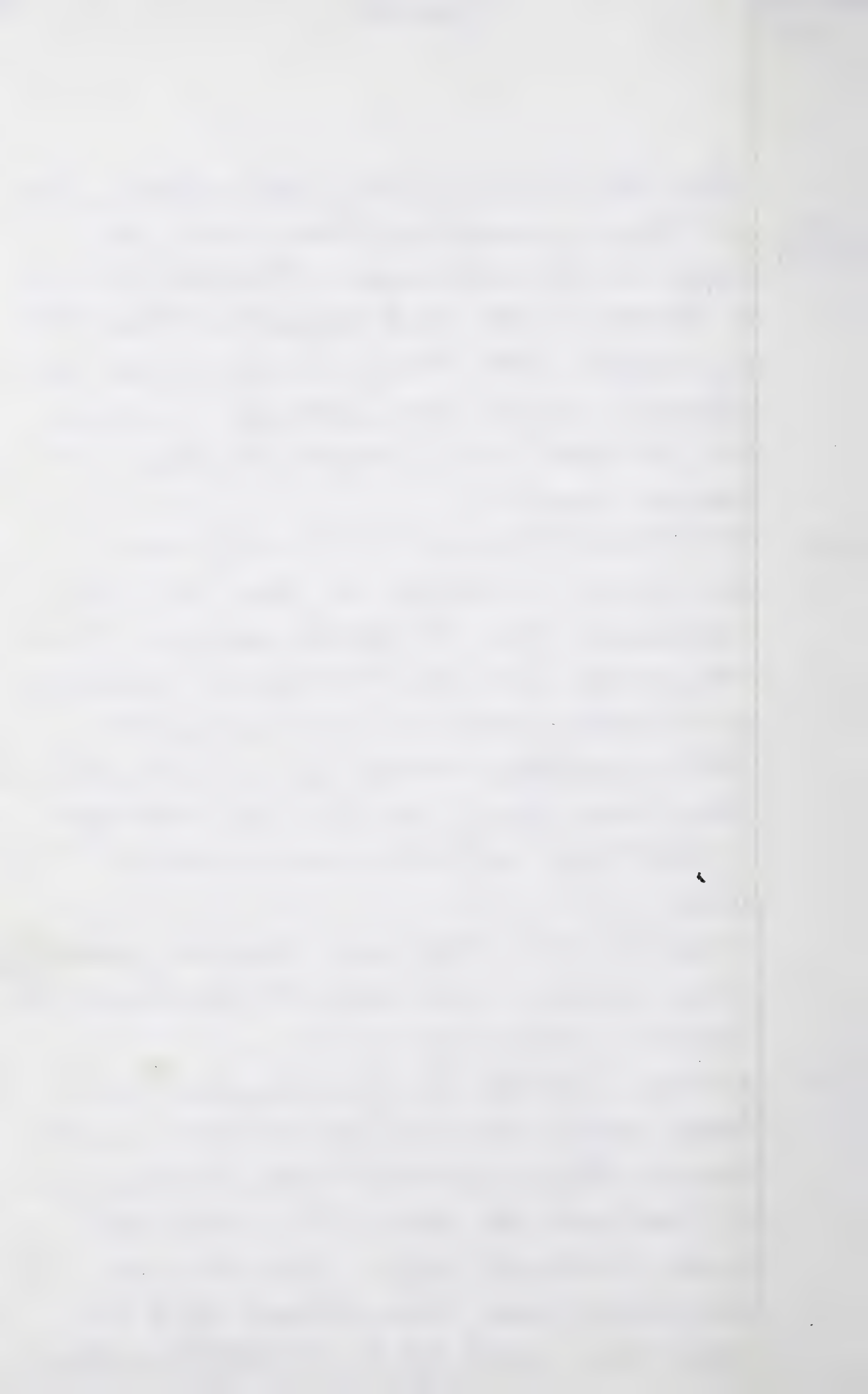
July 25

The Pearsons + Ray went to the study area. This morning I dissected 21 Mus and took chromosomes from 3 Phyllotis auritus. These were animals that had been kept in captivity for a couple of weeks and were very fatty. Nothing precipitated but there was a cloudy, gelatinous filmy mass floating in the TT for each animal. I plated these, but there were no cells on the slides.

7:30pm Went to the study area to collect spiders by their eyeshins. We each had headlamps this time + found more.

July 26

5:30 am. Left Papa León for Chosica (up the Rimac valley) where we met the Davis' and Manuel Plenge, the ornithologist. We drove up the road past San Mateo to the continental divide 15,806 ft. at Tielis. From there we drove down some, then turned off to the right and went up to Pomacocha, where we are guests of Manuel at his fish +



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July 26
(cont.)

Pomacocha, Yauli Valley, 14,212 ft., Depto. Junín, Peru
gun club lodge. It is by the edge of a lake. The surrounding rocky hills have predominantly bunch grass. The soil is hard. There is a lot of tiny vegetation growing close to the ground. It is very cold here and today the wind is blowing hard. Manuel shot a flycatcher that was hopping around at the edge of the lake catching insects (taking the pipet niche). At 4:00 I started up the hill near the lodge and set about 30 small shermans in bunch grass, bushes, but mostly near the rocks in holes I may have found. Really good habitat + fresh sign was rare. 6:00 pm returned to the lodge to find Ray had shot a vicacha and was skinning it. It is a rodent that looks amazingly like a large brush rabbit. The fur is thicker + fluffier, and the ~~the~~ tail is long with long hairs.

8:30 pm. Mrs. Pearson checked the large sherman she set around the lodge and had a live Phyllotis darwini posticalis. Perhaps most of the mice are near here. Ray set small shermans near rock piles, and Dr. Pearson set snap traps along the hill. Carol did, too, but higher up, probably partly paralleling mine, which makes an arch up the hill.

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July 27

Pomacocha, Yauli Valley, 14212 ft., Dept. Junín, Peru
6:00 am Checked our traps. I caught 3 mice:
an Akodon boliviensis in some dried bunch grass,
a Phyllotis darwini posticalis in a hole dug beneath
a large rock, and a Calomys ducillus in a
hole between some green vegetation & a ~~small~~ ^{boulder wall}.
Carol caught 3 Akodon in snap traps, Dr.
Pearson caught 1 Akodon + 1 Calomys in
snap traps, Ray got 3 mice, the same as mine,
and Mrs. Pearson caught ~~a~~ a Calomys. At
8:00 am Carol, Ray, & I went to the other side
of the lake where Ray shot the viscacha yesterday.
I had the rifle, and finally one appeared, probably to
sun itself on a rock. Unfortunately, it seems I
missed, and it ran somewhat erratically between the
rocks & out of sight. We waited for about 15 minutes,
then searched the area for the possible body. No
success. The dead animals caught will be put up
and the live ones taken back to Papa León XIII for
chromosome work — especially the Akodon.
Plans are now for Carol, Ray, & I to go to Huancayo
this afternoon somehow, and somehow get back
to Papa León tomorrow.
We overturned a boat in back of the lodge and
caught ~~an~~ a Neotomys crinitus and got 4
toads under a metal plank.
1:00 pm Ray, Carol, & I took a colectivo to
Huancayo. Arrived at about 3:00 pm.

Papa León Tree, 150±ft., Depto. Lima, Peru.

July 28

6:50am. Got on the train from Huancayo to Lima 2nd class. Arrived in Lima at about 4:00pm. Took a colectivo to Papa León Tree & arrived here at about 6:00pm.

July 29

Dr. Pearson had set snap traps on the study area last night. He caught 6 Mus. We did 2 batches of mice for chromosomes this morning: 3 Phyllotis darwini + 3 Calomys lucilla.

4:30 pm. Injected 2 abodera + 1 Nestor. We went out to the north end of the beach where Mrs. Pearson set out 8 small steel traps in hopes of catching the large rodent whose prints we see all over the sand. We set up 2 mist nets between the rocky formations on the beach to catch bats. Carol went to the study area to catch moths. We caught a small pipistrell in the 30 ft. mist net. Another escaped. Nothing flew into the 15 ft. net. We went to look for geckos but didn't find any. Under rocks I found a spider and a scorpion. We left the nets up and returned at 7:30 to do chromosomes of the injected animals.

July 30

5:30 a.m. We drove back out to the beach and watched the flight of the bats. We caught another pipistrell. Mrs. Pearson checked her traps (3 small steel traps + 5 folding shermans) and had one Rattus by the foot, squealing. We then went to the study area where Dr. Pearson

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July 30
(cont.)

Lapa León Tree, 150 ± ft., Depto. Lima, Peru
had ~~snap~~^{steel} traps for foxes & Carol had set 7 snap traps across the road in rock piles near where the farmers burnt piles of apples. No foxes, but Carol had a mouse in every trap (1 was rebbed). She got 3 Mus, 2 Phyllotis darwini limatus, and 1 Oryzomys. We caught about 3 geckos near the study area, under cardboard or other debris.

8:00 am - injected 2 bats & the Rattus. We will put up Carol's mice except for the Mus. Today is our last day here and we will pack up and go to the Davis' this evening. Tomorrow the Pearsons leave and Dr. Koford arrives.

20 Km. N, 6 Km. W Chancay, 800 ft., Depto. Lima, Peru

July 31

1:00 p.m. Dr. Koford, Ray, & I set out for the north. At 3:30 p.m. we arrived here to the Loma de ~~Lanchay~~^{Lachay}. It is rocky & hilly with cactus & some greenery. It set out about 40 snap traps. 2 years ago when Koford was here last they caught only Phyllotis amicus here. I set out a mist net for bats. Ray saw 3 viscachas but didn't get any. I found droppings of small fox & of viscacha. It is an overcast night, about 50°F as of 7:30 p.m.

Aug. 1

0:00 a.m. Checked my traps. No mice - 3 sprung traps. It rained last night, although was not very cold. There is garua this morning. No bats

Aug. 1
(cont.)

20 Km. N, 6 Km. W Chaucay, 800 ft., Dept. Lima, Peru
in the nets. The birds here are finches *Microsalpax* that
fly in noisy flocks of about 25-30. Also
Ethiopes cactorum (oven bird) is calling. This
morning a hummingbird buzzed past my ear
very early. Didn't get a look at it.

8:30am Drove over to the other side of Lomas de Pachay.
It is much greener here + the vegetation gets higher as
we go higher. Vines + grasses on the dark soil,
century plants, *Casurina*, + other trees. *Zonotrichia*
capensis is very prevalent + singing all the time.
Altitude about 1200 ft. Trees here aren't native.
It's very foggy + moist. Lichen + bromeliads growing
on tree trunks.

19 mi. W Chiquian, 8500 ft., Dept. Ancash, Peru
[3 mi. by road above Cajacay junction, i.e. 3 mi.
NE Cajacay]. We got here at 5:00pm. We
spent the day driving up this valley Fortaleza
and up the E branch of it. It is an irrigated
lush valley with dry rocky walls. We
saw parrots, *Geospiza*, kingbirds, etc. At
5500 ft. we found a DOR *Didelphis*. We are
camped here at a rocky, brushy site
hoping to get *Phyllotis magister*. I set out
30 small Shermans up the steep hillside
with. 6:30 Checked our traps. I got 1 *Phyllotis*
andium under brush in a rock pile. Dr.
Koford caught 2 of the same, by the tails, so

Aug. 2

aug. 2
(cont.)

19 mi. W Chiquian, 8500 ft., Depto. Ancash, Peru
there are 3 live mice to take chromosomes from.
Ray caught 1 dead Phyllotis andinum. This area
may suffer from generally low fertility. Goats
graze here very often & the vegetation is
probably minimal.

7:45 am We are now headed for Lake Conacocha.

25 mi S Huaras, 12500 ft., Depto Ancash, Peru

We passed Lago de Conacocha and kept driving.
The altitude here was 4000 meters. We had been
in the puna grassland with ichu grass (bunch
grass). As we went on towards Huaras the
grasses got a little taller. We were looking for
Tinnamou in the grassland and found lots of
other birds, like Muscisaxicola, ~~Sis~~ Frigillus,
mountain caracara, Cinclodites, and various
small things. At a place near here we stopped
and looked around. Dr. Koford shot a Cinclodites &
Ray shot a small finch of some sort. Dr.
Koford found a freshly dead Tinnamou chick
and nest with shells & the scall cores of the adults.
2:30 p.m. It is raining slightly and the wind
is up. We are in the Puna grassland. There
are snow-covered peaks not far from here. The
stream is a clayish grey color, and the
ground around it marshy.

At 1:15 pm, shortly after our arrival here I injected
the three live Phyllotis andinum we collected



25 mi. S Huancayo, 12500 ft., Dept. Ancash, Peru.
Aug 2 (cont.) this morning. Ray put up his audium. Sheep,
goat & cow droppings indicate grazing here. There
are 3 indian grass & stone huts across the little
stream. Apparently, Phyllotis pictus is here.

Dr. Koford set about 15 snap traps around a rock wall.
Ray set about 30 small Shermans around another
rock wall and across a field. I set 30 ^{small} Shermans
along a long rock pile and along the bank
of the stream. I didn't see much sign. Ray &
Dr. Koford went out hunting. Ray shot some
kind of finch, and Dr. Koford came back with
a tinamou. I took chromosomes of the 3
injected mice.

Aug. 3 6:30 a.m. Checked my traps. I caught 1 Cakmyx ducillus
in the middle of a small (4' x 4 ft.) rock pile. Nothing
else in the traps set along the stream bank. Ray
caught nothing. Dr. Koford got 2 Akodon boliviensis (1 imm.)
in the snap traps he set along a small stone
wall corral in the puna grassland. I found a
toad in the tent. The tent is placed only about
10 ft. from a very small man-made stream
(2-3 ft. wide). Dr. Koford shot another ^{Finamou} ~~Tinamou~~,
this one smaller (280 g.) than the one last night.
I decided to try my luck with the single-barreled
shotgun, and shot my first bird, a hummer,
with .22 shot. It went down to 26° F last night.
This morning it is warmer & only a slight breeze



Aug. 3 (cont.)

25 mi. S Huancas, 12500 ft., Depto. Ancash, Peru
is blowing. The ~~two~~ tinamou Dr. Koprd caught last night probably weighed between 400-500 g. It was a mature female. Apparently there are no young in this season. She had about 10 ova. The breast feathers, as well as most of the feathers, are speckled brown & tan. According to Dr. Koprd, when she leaves the nest she plucks out feathers to cover the eggs. Perhaps the ♂ does some incubating also. The smaller tinamou caught today might be a male, indicating size dimorphism. The hummingbird is an adult, 9.4 g., with a green gorgette bordered with navy blue. It has a yellowish green back and a blue tail. I saw it perch on a small rock formation. It flew away as I approached, so I sat and waited. In another 2 minutes it returned and I shot it.

~~1:30 p.m. We left the other~~
4 mi. S, 8 mi. E Recay, 12500 ft., Depto. Ancash, Peru
[12 mi. by road from Catac towards Chavin]

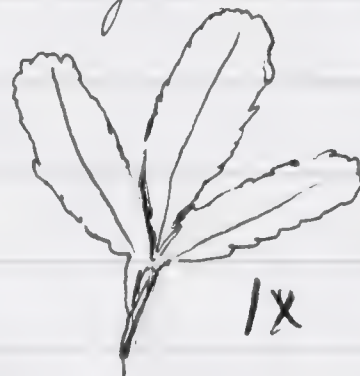
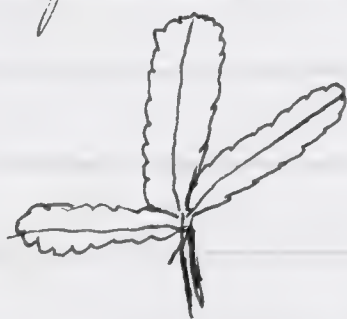
1:30 p.m. We left the campsite & went further along the road of the puna grassland. We came to a little pueblo called Catac, and there took a little turnoff to Chavin (73 Km. from Catac by road. Catac is 26 km. by road from Huancas). As we approached a summit, about 12 miles on the road from Catac we came to a rather large lake, on the ~~right~~^{left} of it was puna grassland with a couple of brushy canyons, on the far side the snowy mountains of the Cordillera Blanca are evident, and the right side has

4 mi. S, 8 mi. E Recay, 12500 ft., Depto. Ancash, Peru
[12 mi. by road from Catac towards Chavin]

Aug. 3
(cont.)

shorter grass & more barren rocky hillside. The lake has lots of fish in it. We are camping here tonight. There are also rock walls near the base of the canyons.

2:45 pm. I've walked along the left side of the lake and have come to the second canyon. There is a small rocky stream flowing down it into the lake. In the canyon are growing tall shrubs, or perhaps they are trees. The bark is scaly and reddish. The green or reddish-yellowish leaves are 3 parted:



The little canyon appears very lush. There are short green grasses & moss growing through it. The water is clear & fast.

At 3:30 it started to hail. At that time I was at the first canyon, at the ~~SE~~ end of the lake, where the stream comes out of the lake. This canyon appears somewhat broader. It is rocky and the bushes & trees are fairly dense. There's a lot of low growth, also. Ray set snap traps up the canyon and live small shermans in the grassland and some rock walls near the stream where we are camped. Dr. Koford set snaps along the rock walls. I took

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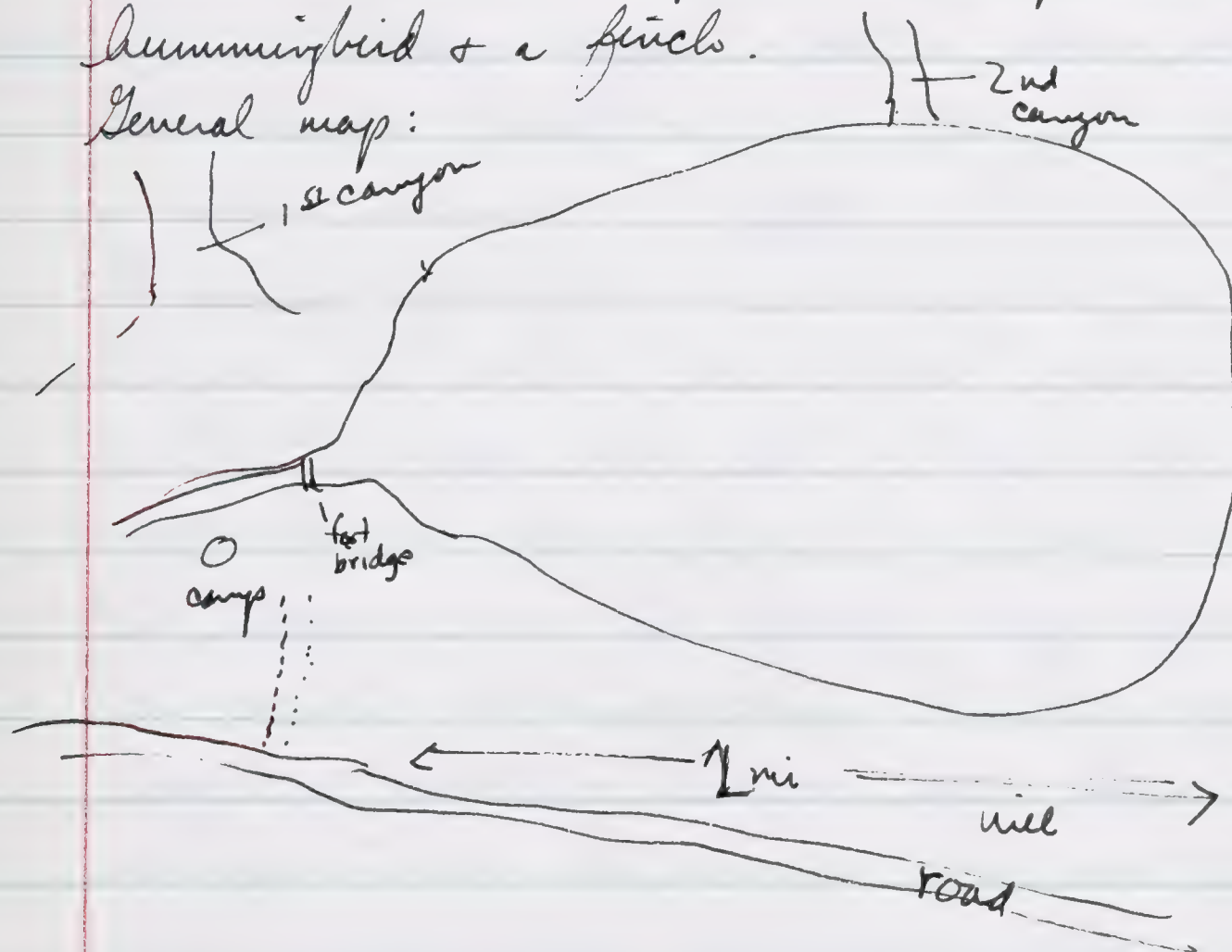
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4 mi. S, 8 mi. E Recuay, 12500 ft., Depto. Cuzco, Peru
[12 mi. by road from Cotac towards Chavin]

Aug. 3 (cont.)

32 small shermans up the canyon and set among the rocks + bushes. Then I set some more up along the small stream where it is moist + the vegetation fairly dense + lush. The soil is soft + there are abundance of rocks. I didn't see any sign, but the habitat certainly is there. Ray shot a hummingbird + a finch.

General map:



Dr. Koford caught a rainbow trout. He checked his traps and found an Akodon boliviensis in a snap trap placed up on a rock of a rock wall, not very near grass.

Aug. 4

I checked the traps I set up the canyon. No catch. There seems to be plenty of mouse habitat, but no definite sign of them up in the lush canyon. Last night it got down to 22° F. Dr. Koford caught 6 more mice - 4 Akodon (same immature) and

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4 mi. S, 8 mi. E Areash, 12500 ft., Depto. Areash, Peru
[12 mi. by rd. from Catac towards Chavín]

Aug. 4
(cont.)

2 Phyllotis. Ray caught a dead Calomys ♀ (3 embryos) in his live trap, and also a live Phyllotis which looks like the ones Dr. Koford caught. Dr. Koford shot 2 more birds - one a brown hummer, and the other an ovenbird with a grey back & wings and a chestnut chest. Injected Calomys, Phyllotis, + another mouse caught by the tail (perhaps P. sublimis). I put up Dr. Koford's animal + discarded 3 Akodon: ♀ 19 g., ♂ 15 g., ♂ 10 g. The ~~animal~~ Phyllotis we are catching here are probably sublimis.

3:30 pm. I took a box of small shermans over to the 2nd canyon and set 24 traps along the rock walls, beneath tangles of roots + cactus, and up the stream along the rocky grassy areas. I then went further up along the lake up over a couple of hills to the far end. There is a small waterfall there. At the far end is a field of marsh grass that prevented me from crossing over to walk around the other side of the lake. Dr. Koford put out snap traps and about 27 large folding shermans in bunch grass + rock walls. Before sunset he had 4 more Akodon boliviensis. Ray set snaps + small shermans along more rock walls. I saw an Oryzomys ferrugineus on the lake. It had a black head + neck, reddish brown back, and a tail that sat straight up vertically. At sunset I heard what were probably

4 mi. S, 8 mi. E Pucallpa, 12500 ft., Depto. Ancash, Peru
[12 mi. by rd. from Catac. towards Chavin]

Aug. 4
(cont)

frogs. The noise was a croak followed by 3 clacking noises that sound like 2 rocks hitting each other. The moon is about half full. This afternoon from about 2-4 pm it hailed again. It takes about 50 minutes to walk from 1 end of the lake to the other, so it's probably about $2\frac{1}{2}$ -3 mi long.

8:30 pm. Dr. Koford + I checked traps. He had 3 P. sublimus in his snap traps, placed in rocky area with abundance of bunch grass. One was still alive. Nothing in the large shermans. Then we checked the snap traps Ray had set at the rock wall supporting part of the road. He had 3 Phyllotis pictus and what appears to be an Andinomys (large ^{segment & 3rd 5mm all left} mouse). We went back to camp + got some more large shermans + set 15 of them. There are an abundance of holes + both large + small droppings.

Aug. 5

Minimum temp. last night was 18°F . Dr. Koford checked traps at 2:30. Ray had 2 Calomys in the snap traps. This morning there was 1 more Calomys. Nothing in our large shermans. Apparently the large mice (Andinomys, P. pictus) are active in the early evening and maybe the small mice active later. Correction on Ray's catch. Of the last 3 mice, 2 are Calomys ^{sucilla} (broader, blunter head, very short tail, bigger feet, greyer underneath) and the other a Phyllotis sublimus (longer tail, though



Aug. 5
(cont.)

still short, larger ears, though still white at base, pointed nose,
small feet). I checked my traps + ended up with 4
mice. The first was an Akodon, dead, caught in a small
Sherman placed at a hole in a rock wall built near the
stream. Akodon is fairly uniform in color, dark with
tan + grey. It has a tail not longer than the length of the body.
Ears are fairly small though not covered by fur. The 2^d
mouse was another Akodon caught live in a trap placed
at a hole under a rock near bunch grass about 5 ft.
from the stream. The third mouse was a Phyllotis
^(? perhaps Calomys scellus) sablinus caught in a small rock pile surrounded by bunch
grass, about 20 ft up from the stream in a dry place
full of bunch grass. The last fourth mouse was caught
in the last trap, placed in a very wet place, under a large
rock at hole bordering a small patch of short green grass. It
is an Oryzomys. It's a small mouse with small ears and
a very long tail. Dr. Koford checked his traps and
caught 14 more mice in his snap traps: 6 Akodon (perhaps
different species), 4 Oryzomys (near stream, within 10 ft of
stream bed), 3 perhaps Calomys scellus or some sort of Phyllotis,
1 Calomys ducilla, and 1 larger mouse, maybe P. pictus or
^{(♀ pregnant - 2r 2lgr 23mm).} andinomys. I've injected my 3 live mice for chromosomes.

(MAR 28, 29, 30) Dr. Koford talked to an Indian woman
living near here + asked her the name of the lake. She
said it is called Querococha.

4:00 pm. I set 41 snap traps about 3/4 mile down-
stream. I found several rock wall structures

Aug. 5
(cont.)

4 mi. S, 8 mi. E Recuay, 12500 ft., Depto. Arequipa, Peru
[Lake Quenococha, 12 mi. ~~forward~~ from Catacto Chavin]
(corrals) that Indians had built. 10 snap traps
around 1 wall, 15 around another. Upstream
was another canyon. This one is narrowest of
the three I knew. There is only a trickle
but supports dense ichu and mossy grass.
I set 16 traps up this canyon in the grass
+ at rocks and holes. About 100 yds. above
the stream I found a toad jumping through the
puna grass. ~~It is~~ Its body is about 2 inches long
and it is a light green color with darker green
stripes. It was moist when I picked it up. I
suspect this is the same ~~frog~~ species that has been
making the croak-clack-clack-clack noises we hear
near the stream + lake side. Mr. Kofford set 30
snap traps up the road along rock walls both
to the left + right of the road. Ray set a box
of small shermans over by the rock walls near
by and near the road.

Aug. 6

I checked my traps. At the first rock wall, where the
ichu was very thick and I had set 10 traps, I
caught 5 Akodon. At the 2nd, larger rock wall
where vegetation was sparser + I had 15 traps out, I
caught an Andinomys (MAL 250), 2 Phyllotis
pictus, and an Akodon. These were caught
at hole between the rocks. Along the stream
where I had 17 traps set I caught a
Calomys scottii (?) (MAL 251) in a large hole



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4 mi. S, 8 mi. E Recuay, 12500 ft., Depto. Ancash, Peru
[Querococha, 12 mi. by rd. from Catac to Chavin, Depto. Ancash]

Aug. 6
(cont.)

of rocks + soil in the bank, and an Oryzomys near a large rock in moist soil about 3 feet from the water. Dr. Koford caught 3 mice out of 30 ~~traps~~ ^{traps} set in rock walls, a Phyllotis pictus, an Alodon, and an Andinomys. Ray caught 1 live mouse - a Calomys scirrus. I will discard my 6 Alodon: ♂ 24g., testes 3x6; ♂ 20g. testes 3x6mm; ♂ 18g. testes 2x3mm.; ♀ 14g. imm.; ♀ 25g. uterus vascular; ♀ 23g. uterus ^{distended} enlarged + elongated.

We ~~long~~ broke camp and headed up the road. Above the crest there is a valley through which ~~the~~ an inlet to the lake runs. There are slightly forested hills, grassland, boulders, + some rock walls. We continued along the road and passed by some ice sheets. As progressed upward, and at the top there is a tunnel about 400 m. long. On the other side the road winds downward and there are some rock slides where we saw many viscacha droppings. There were also some ponds in which there were thousands of fairly large tadpoles. We couldn't find any adults, however. We drove back to the area above the lake and set up camp. I took 42 snap traps up the mountain side and set them in the grass and among the boulders + trees. Viscacha droppings were thick + fresh everywhere. The low avenues

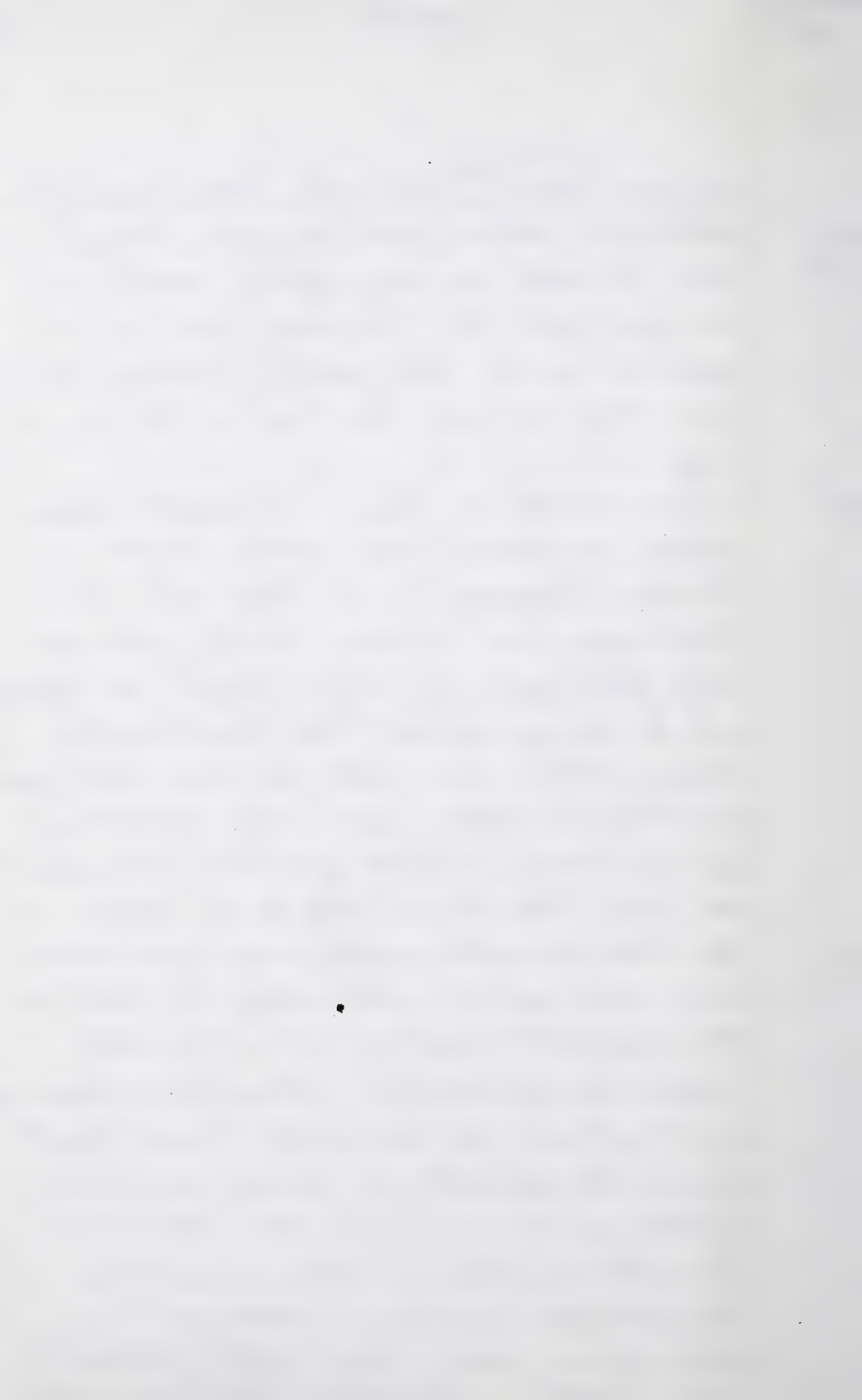
Aug. 6
(cont.)

6 mi. WSW ~~from~~ ^{Calicut Tunnel}, 13000 ft., Depto. Ancash, Peru
created by the boulders provide very good shelter for them. I didn't see any sign of smaller mice. Dr. Koford set about 25 snap traps in the grass and in the dense woody, bouldery forested area. Ray set some live traps in the grass near camp.

Aug. 7

6:45 a.m. Checked my traps. I caught a Calomys sorrellus in bunch grass about 200 yds. up the slope, Oryzomys by a large rock another 50 yds. up, and Calomys lucilla under some large boulders. Dr. Koford caught an Oryzomys ^{1 akodon in the forested area, + a} and 1 Calomys sorrellus ^{in rock + grass}, and Ray caught a Calomys sorrellus in a rock pile near bunch grass. We will stay here another night. After I checked my traps this morning I climbed up to the top of the highest peak here. From there I could see the entire lake (Lake Quenococha, according to an Indian resident) on one side, and the whole valley (at which we are camped at 1 end) off to the other side.

I didn't see any viscacha, although their droppings are everywhere. We have checked Pearson's Phyllotis revision, and apparently we haven't caught any phyllotis up here or at the lake. What I may have called P. sublimus elsewhere is probably Calomys sorrellus, and the P. pictus may be another genus or species. Last night it got down to 17° F. Yesterday & today it has been clear, but



aug. 7
(cont)

6 mi. WSW Calum Tunnel, Depto. Ancash, Peru 13000 ft.

very windy, so that it seems very cold. The air up here is extremely dry. Dr. Koford just caught a Neotomys in a trap placed under the edge of a boulder in grass (greenish, moist). It looks like a lactating or pregnant female.

2:00 pm. I set 40 snap traps down a boudery, rocky valley that goes down towards the lake. At the top ~~was~~ was a small section of rock wall and a few small boulders ^{surrounded by} lots of grass where I set traps.

Going down, the boulders got larger and many viscacha droppings were around. I set some traps under them.

Under a small boulder (i.e. large rock) I found a complete skeleton ^{of (sp. of mouse)} and the skull of what appears to be an Akodon. They were lying within 4 inches of each other. After setting the 40 traps I walked back up the hill along my trapline and found I

had caught 3 animals in 3 of the beginning traps. There was an Akodon under some big rocks near

bunch grass, a Neotomys ^(MAL 256) under a large rock shelf, and another Akodon by the rock wall.

9:00 pm. Checked 4 of my traps and caught a Neotomys by the edge of a large rock in the rock wall near bunch grass. It was a large one (MAL 262).

aug. 8

7:00 a.m. Checked my traps. I caught 3 mice. There was a ~~small~~ Neotomys (MAL 263) at the entrance to a native shelter made of

Aug. 8
(cont.)

6 mi. WSW Cahul Tunnel, 13000 ft., Dept. Ancash, Peru
hay (looked like a haystack). Two more Akodon
were caught, each under a boulder near grass.
None were caught at the lower part of my trapline.
I suspect the viscacha are pretty much taking over
that area. Apparently both Neotomys and Akodon
are active diurnally & nocturnally. Ray set
small shrews in bunch grass & rocks along the stream and
caught 2 Calomys serrulus and 1 Akodon.

12:30 pm We broke camp and drove towards Huancayo,
~~12:30 pm~~ arriving at about 3:00 pm. There we
did some shopping and left on the road towards
Casma. We reached Callan pass at about
6:30 p.m., and drove about 1 mile past the
summit, where we are camping off the road.

2 km S, 11 km W Huancayo, 13000 ft., Ancash, Peru
1 mi W Callan, Peru

6:40 p.m. I set about 30 snap traps along a
rocky, bouldery area just down from the road.
As I was setting my last trap I heard a trap
go off, then heard the trap being pulled along the
rock. I went back to the trap and found a
Phyllotis andium caught by the tail.

9:00 pm. Checked my traps and found 3 mice.
Two are smallish and gray with relatively short
tail, probably Phyllotis pictus. Under a
large rock shelf I caught a very large
female Phyllotis — maybe Phyllotis magister?
My luck may be due to the bait I am using.

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Aug. 8
(cont.)

Callan, 2 km. S, 11 km. W Huancas, 13000 ft., Dept. Arequipa, Peru

A few days ago I mixed up some rolled oats, quinoa, and ~~moistened~~ moistened this with bean juice. It seems to have fermented or something, and is very odiferous..

Aug. 9

6:30 a.m. Checked my traps and found only 1 mouse - that looks like a Phyllotis pictus. It has lax greyish fur and a broad head. Perhaps the mice here are early evening or diurnal mice. Ray caught nothing and Dr. Koford caught 3 mice - one a Calomys sorrebus in the grass and the other 2 probably Phyllotis pictus. The big Phyllotis I got last night is still unidentified (MAL 267).

10:30 a.m. We left the campsite and traveled down the road towards Casma until reaching a place Dr. Koford camped at 2 years ago and caught Phyllotis magister.

1 km. N, 12 km. E Paracota, 8500 ft., Dept. Arequipa, Peru

The area is located along a steep valley, along which the road goes. It seems to me to be very dry and dusty as well as warm. Apparently it used to be much greener with bushes. Now it has been cleared to a good extent for cultivation. There are still bushes, some with blue flowers + some with red, and there are tiers of old rock walls. I set about 30 small shermans along rock walls up on the slope, and 40 folding shermans higher



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Aug. 9 (cont.)

1 km. N, 12 km. E Paríacota, 8500 ft., Depto. Arequipa, Peru

up in the brushy, rocky area, beneath bushes or along an old rocky narrow irrigation ditch. Ray set about 20 small shermans along a rock wall and a bag of about 30 snap traps on a dry brushy slope facing west. Dr. Koford set 30 large shermans near where I set my large shermans, also in bushes and near some segments of rock wall. He also set up a large mist net for birds or bats. As I was setting my large shermans I saw a very small hummingbird, only about 2 inches high and white! There are lizards here and I have seen at least 3 kinds. We have pitched the tent up from the road and can look down the valley until it is covered by fog. Dr. Koford shot a small tinamou.

8:00 pm. I went with Dr. Koford to check the net placed a few fields up the slope. No bats. Dr. Koford checked his large shermans and had no catch.

Down the slope along rock walls near camp, however, he had a Phyllotis andinum live in a snap trap and a dead one under a Maquey plant.

August 10

6:00 am. Checked my traps. Out of 70 live traps all I got was the skin off half a tail, caught in a large sherman. Dr. Koford caught 2 Phyllotis andinum in his large shermans, and Ray caught 1 Phyllotis andinum in his small shermans

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Aug. 10
(cont.)

1 Km. N, 12 Km. E Paracota, 8500 ft., Depto. Ancash, Peru
and 4 dead ones in his snap traps. There was a Zonotrichia capensis in the mist net. I saw another hummingbird - this one green with an orange gorgette.

1:00 p.m. Took chromosomes from 4 mice - the Phyllotis I caught by the tail at Callan, 2 Phyllotis andinum that Dr. Koford caught last night, and 1 Rat Ray caught. We set traps out again. I left my small shermans out by the rock walls, and reset the 40 folding shermans near bushes & rocks on a nearby slope. There seem to be many species of flycatchers here. Dr. Koford & Ray ^{each} ~~both~~ collected a tiny one with a white eyestripe and crest. Dr. Koford shot a type of small whippoorwill. It has a very large mouth (and flexible) as well as feathers on the tarsus. Ray shot a dove with orange around the eyes.

Aug. 11

7:00 a.m. Checked my traps. I had 1 Phyllotis (probably andinum) in the large shermans beneath a large man-made rock pile with branches thrown on top of it. Unfortunately, at some time as I was picking up the rest of the traps I looked at this unfolded trap in my hand and unthinkingly began to fold it, whereupon the mouse fled. Several agonizingly frustrating minutes of chase fail to secure it again. It was a very gray mouse with a fairly long tail. I then checked my small shermans and found 2 mice by

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Aug. 11 (cont.)

1 km. N, 12 km. E Paríacota, 8500 ft., Depto. Arequipa, Peru.
the rock walls. Both are andium. Dr. Koford checked his traps. He caught nothing in the 28 large shermans he set out and had so carefully rubbed over with dirt to make them look hospitable to the mice. In his snap traps, set along the same line, he caught 4 mice: an andium, 2 that are definitely magister, and 1 possibly a magister. These were set near rocks in bushy, moist slopes. P. magister seems to be characterized by large brown feet, greyish head contrasting with a brown body. It is a large mouse, and often has a pectoral streak. I have injected my 2 mice and Ray's mouse for chromosome work.

4:30 p.m. Went further up the terraces to near where Dr. Koford had caught his mice and snap traps. We glued some dust unto the first part of the floor of the set traps (37 traps with dust on the front doors) to make the traps seem more inviting to the mice. I set them under bushes and near rock piles and rock walls. I checked the mist net and found a Zonotrichia capensis tangled in it. I untangled it and released it. There were many hummingbirds around. They seem to be able quite well to see the net and may hover just before it and fly around to look at it from different

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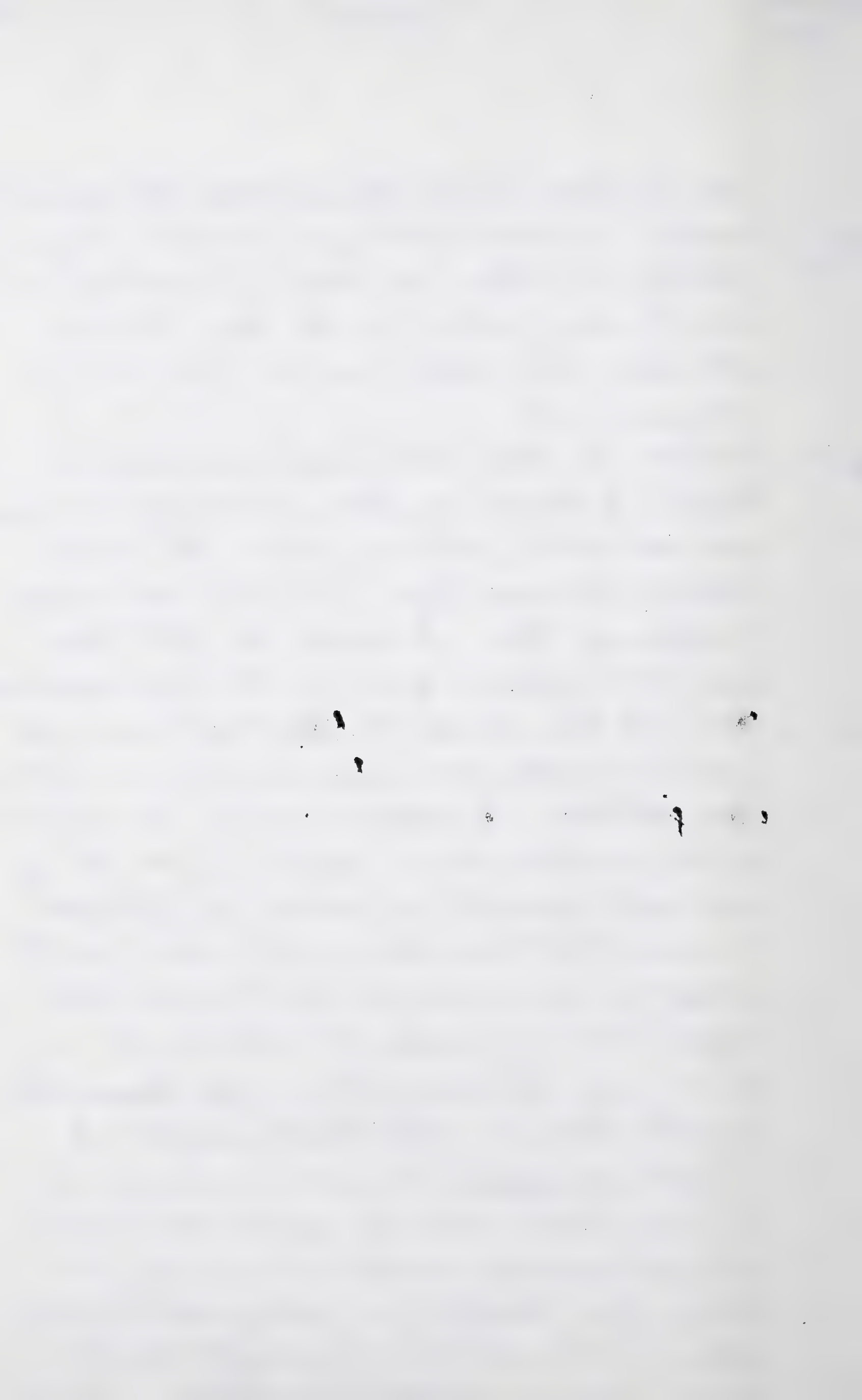
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Aug. 11
(cont.)

1 km. W, 12 km. E Paríacota, 8500 ft., Dept. Arequipa, Peru
angles. I saw a flock of 4 smallish noisy
parrots. Dr. Koford set about 30 small sherman
near the same places as he had the large
shermans last night, and he left his large
shermans out.

Aug. 12

6:45 a.m. Dr. Koford and I went up to check our
traps. I checked my line, not picking any traps
up, and didn't find any mice. Dr. Koford
checked his snap traps (38 of them) and caught
7 andium in them. He checked his live traps
and had 1 andium out of 24 large shermans
and 1 andium out of 32 small shermans. We
decided to pick up our traps and move to a little
lower altitude. I picked mine up, and much to
my surprise there was a magister in one set by
rock wall surrounded by bushes. I'm pretty sure
I checked that trap before, so the mouse probably
entered the trap sometime in the 1 1/2 hours that
elapsed between my checking it & collecting it. In
the mist net this morning flew a green hummingbird,
a yellow finch, & a white-throated sparrow. I
injected my magister, Dr. Koford's 2 andiums and
the live andium that Ray caught. (MAL 279-282).
3:00 p.m. We left our campsite and drove down the
road a few kilometers to a point (probably ~ 7000 ft.)
where the old road had once crossed the river.
We ~~are~~ set up camp across the stream.



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Aug. 12
(cont.)

6mi. ENE Paríacuta, 6500 ft., Depto. Ancash, Peru

I set out about 30 small shermans along the stream under rocks + boulders and in tangles of roots along the bank. Dr. Koford set about 20 snap traps higher up in the rocky slope. The area is somewhat dry with deserty vegetation on the slopes. There is brush closer to the water. Dr. Koford set up a mist net. In the evening I caught a large frog by the river. It reminds me of Rana pipiens (MAL 283). I hear bats at night, but as of 9:00 p.m., none are in the nets. There is skunk smell here in many places along the bank in tangle of roots + boulders.

Aug. 13

Nothing in the bat nets. Dr. Koford caught 2 very large andium and I got a live Akodon boliviensis in a jumble of large boulders. We drove out to Casma and then up north, we got to Trujillo at about 3:30 p.m. Tonight we are spending the night a bit north of Chicama. Ray + Dr. Koford set out a few snap traps in the bushes here. The bushes have very large pods. They are Capparis bushes.

Aug. 14

15 mi S Pacasmayo, Depto. Libertad, Peru [Km. 630]
Ray caught a Mus. This morning I found the bleached skull + part of the skeleton of a hog-nosed skunk (MAL 285). We drove north and stopped along the highway ^{at areas} where there were abundant small dunes with Capparis growing on them. At 10:30 a.m. it was very warm + windless and many lizards of different species could be seen

Myrna Leng
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3 mi NW Mucupe, 100 ft., Depto. Lambayeque, Peru
~~dashing all~~

Aug. 14 (cont.) dashing all over. I noticed one prevalent behavioral characteristic ~~is~~ that I have never seen before in lizards. A lizard would dash a few yards and stop, then raise one forearm and give it quick shakes for about a second, then raise the other one and likewise shake it. Sometimes only one arm (the majority of which was the right) would be shaken. Perhaps this is some sort of territorial signal or warning signal. There were flocks of very small birds that peeped noisily as they foraged from hummock to hummock. I also saw many hummingbirds. We drove to the mouth of the Rio Saña via a small dirt road, and there caught several lizards of different species. The beach there apparently has no sand above, just pebbles. There were a couple of lagoons in which thousands of little fish swam. I found that often lizards would hide under dead pelicans, probably for warmth.

Tonight we are camping near the turnoff to the highway on this dirt road along the Rio Saña. I have set out 28 small shermans around the hummocks. We're trying to get both a southern extension of the range of Paralomys gerbillus, as well as both this species coexisting with Mus, since it seems Mus is pushing out gerbillus further north. So far, it seems that it is

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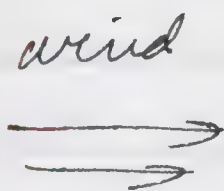
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Aug. 14
(cont.)

3 mi. NW Mocupe, 100 ft., Depto. Lambeyque, Peru

warm and windless in the mornings and gets cooler + windy in the afternoon. The dunes here are crescent-shaped, with the wind blowing from the ocean side. The

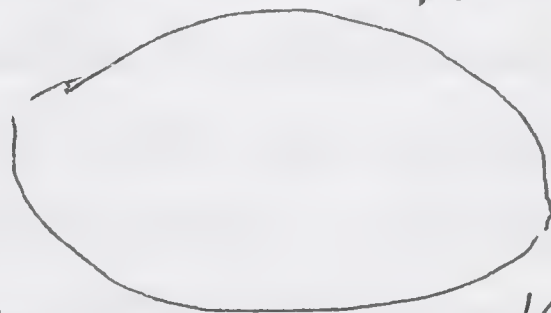


hard,

steep

packed sand.

There seem to be areas of this and areas of the rounded hummocks upon which the *Capparis* with the bulbous fruit with little seeds $\frac{3}{4}$ in. long grows.



filled about

The carnivore droppings

I have found indicate the foxes here are eating these fruit. I found no bones in the scats. Ray set out 20 small shermans + about 25 large ~~9:00 p.m.~~ ^{shermans}. Dr. Koford set out about 35 snap traps.

9:00 p.m. Dr. Koford and I took the lantern out to hunt for geckos. The night is fairly warm, probably a little above $60^{\circ} F$, and the breeze has died down.

We walked along the sand where surface erosion had exposed the rocks. We found no geckos. Walking along the insides of the crescent of the barcanes, we noticed that the angle of the lantern showed up many kinds of tracks. Following these, we

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3 mi. NW Mucupe, 100 ft., Dept. Lambayeque, Peru
found that many were made by insects & other invertebrates,
such as scorpions, beetles, & spiders. By following tracks
on the soft sand of these dunes we found 2 geckos,
a very small one (MAL 289) was found on the
soft, slanted part of the dune, and a large one
on the hard rounded side. On the way back to
camp I noticed a gecko (MAL 290) running along
the rocky sand. I heard the high-pitched sound of a bat.

August 15

7:00 a.m. Checked my traps and found 1 Mus. There
were fox tracks near a few of my traps. Ray caught
2 Mus. Apparently they are not very abundant here,
although more would probably be caught were the traps
to be left out ~~every~~ ^{several} nights. My Mus: ♀ 7.3g., no embryos - immature

8:00 a.m. I have walked about a mile south of
our camp, to hummocks covered with Capparis in
order to get some behavioral notes on lizards. It is
overcast + ^{slightly} breezy this morning, probably about 60°.
I haven't seen any lizards yet. I have seen
hummingbirds, however. They are very active and it
is difficult to get a close look at them. They seem to
fly in little flocks of 4 or 5, or sometimes singly.
They make high-pitched, squeaky clicking noises. I
also saw the pale desert form of Geositta. The
hummers make a clicking noise as they fly, also.
The Geositta fly low to the ground.

8:45 a.m. I got a closer look at the hummingbird,
a perhaps it is a different kind. There are small

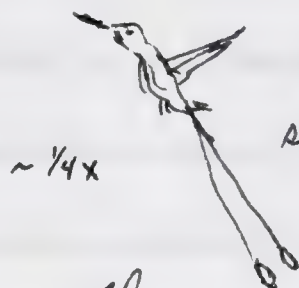
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Aug. 15 (cont.)

3 mi. NW Mocupe, 400 ft., Dept. Lambayeque, Peru
and brownish with greenish backs and long racket-
tails. They seem to swish their tails back &
forth somewhat as they perch or hover.



8:50 am. The sun has come out (i.e. the clouds cleared
away) and I expect the lizards will, too. There are
swallows here with white fronts and dark backs.

9:20 am Saw my first lizard of the morning - a small, light-
colored one with a dark stripe on its ventral side.

9:21 am Saw another of the same variety - there are
probably only 2 in. S-V.

9:40 I saw another small lizard, this one darker in color and
maybe spinnier. Perhaps lizards come out according to how big
they are - the smaller ones emerging first. Then again,
perhaps only the small ones move so I can see them.

9:45 Watching a smallish (S-V ~ 2 1/2 in.) pale lizard with
tan, mottled back and black + white stripe on shoulder.



It ran a short ways when it saw me
(or felt my vibrations), then stopped + did a few fast
push-ups. It stayed in the same place for a few
minutes, occasionally lifting up + looking around.
After about 3 min. it did another push-up display.
Its tail is about as long as its head + body.

10:05 It is becoming windy now. I saw a larger
individual of the type of lizard I described above.

I chased it a ways. When it stopped, it bobbed
its head 3 times. I haven't seen the "hot-foot"

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3 mi. NW Mocupe, 100 ft., Dept. Lambayeque, Peru
Aug. 15 (cont.) display. Perhaps it is species specific, or maybe it
is indeed a reaction to the temperature of the sand.
When I saw the display yesterday it was quite hot.
Maybe it's just coincidence, but the lizards I've seen
so far are sequentially larger & larger. I wonder if lizards
have the equivalent of roosting places - special places
where they go each morning to warm up. The sky
is overcast again and lizard activity is low.

11:30 am - on my way back to camp I saw a lizard
running along the soft part of the sand dune (MAL 291).
It buried itself and I dug it out.

Dr. Koford shot a couple of the hand shakers lizards.
They are similar to Cnemidophorus tessillatus. He
got 2 Mus in his snaptraps. None of the Mus
seem to be breeding.

2 mi. SE Morrope, 100 ft., Depto. Lambayeque, Peru
We arrived here at about 4:30 p.m. It is a mesquite,
sandy desert area not too far from cultivated
places. I set 28 small shermans and 35 large
shermans in a line along a brush fence,
under which I saw bottle vice highways.

Dr. Koford set snap traps, and Ray set ²⁰ small
shermans and about 25 large shermans under
bushes & out on the sand. There are lizard
tracks here, too. After 6:00 p.m. the fog
came in & down and it is becoming quite
windy & cold.

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Aug. 15
(cont.)

2 mi. SE Morrope, 100 ft., Depto. Lambayeque, Peru
8:00 p.m. Dr. Koford + I went to check our traps and look for geckos. I had 1 live Paralomys gerbillus in a small sherman set in amongst a leafless tangle of Capparis branches as part of the brush fence. Dr. Koford had 3 mice in his 48 snap traps — one was barely alive, one immature small one was caught at the base of the tail, and another adult was dead. We found 3 geckos, one near the brush fence in erosion pavement, one at the base of a mesquite tree, and another out in the open erosion pavement. As of 9:30 p.m. it is still windy, although not very cold or damp.

Aug. 16

7:00 a.m. Checked my traps again and got 2 more Paralomys in the brush fence. Dr. Koford had 3 more, and Ray caught one. The Paralomys I got ~~yesterday~~^{last night} is a lactating ♀. The two caught this morning were scrotal males. I have injected one for chromosomes and will keep the other 2 (♂ + ♀) for behavioral studies. Last night it remained very windy and rained about twice for 5 minutes each, not enough to really get the ground wet. At 6:00 a.m. this morning the wind had died down, but resumed by 7:30 a.m. It is somewhat overcast + hazy this morning. Ray shot a wren-like bird, and Dr. Koford shot a large, very colorful lizard. We left at 1:00 p.m. and headed towards Olmos.

Myrmal Long
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[red iron bridge], 12 mi. ENE Olmos, ^{2000 ft.} ~~2000~~ Depto. Lambayeque, Peru
Aug. 16 (cont.) We arrived here at about 4:00 p.m. We are camped right by a red iron bridge. There is water under the bridge, but very little. This is a dry brushy area with steep hills with rock outcroppings. I set 30 small shermans at the lower part among the brush and boulders. Ray set small shermans + large jdking shermans in brush + rocks. Dr. Koford went up a hill and set snap traps among the rocks. I set up a mist net across the stream where the brush was somewhat thick and created a narrower place.

7:15 p.m. It is a warm, slightly breezy night. Ray caught 3 frogs near the stream. They are abundant and can be heard calling - a long fast-vibratory call. Many insects ~~can~~ are also making noise.

The sky is mostly clear, but the $\frac{1}{4}$ moon looks hazy.

8:00 p.m. We got 2 bats in the net, a Phyllostomid ^{MA 293} and a Myotis ^(MA 294). There are hundreds of toads here. They are calling down near the stream and are crawling around in the dry brush tangles higher up. Some are very large - maybe about 7 inches long. Some are amphioxing, the smaller, greenish ones ($\sigma\sigma$) on top of the larger, brown females. We got another Phyllostomid in the net.

Aug. 17

Checked our traps. Dr. Koford was the only one to catch something - he got some sort of Phyllotis in a

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[red iron bridge] 12 mi. ENE Omos, 2000 ft., Depto. Lambayeque, Peru
Aug. 17 (cont.) snap trap placed along the rocky slopes. No more bats were caught last night. I caught a small lizard by hand (AMC 295). It had an orange head and yellow chin⁺ was running through the brush.
10:00 a.m. Caught a Furnarius in the mist net. It is a golden tan bird about the size of a robin and has a light yellow eye with black pupil. The beak is long and somewhat curved. I walked down the stream a ways and saw lots of lizards & doves. There are woodpeckers here. I saw 3 on a tree trunk. Each had a bright red crest, black eye stripe, & white cheek & ventral. Under a rock I found a large toad & a small lizard together.
12:00 noon. Left our campsite and drove up the road to Porculla Pass. It is steep and brushy and overgrazed. Bromeliads are growing on the trees. We drove back 2 km. from the pass and set some traps along a fairly heavily vegetated slope with rocks. I set a few snap traps along a dry creek bed. We then drove up to the pass where we set up camp right at the pass. Dr. Koford set snap traps along a creek, Ray set along a brushy rocky ridge, and I set my 30 small shermans up the west-facing slope along brush and a few scattered rocks. Our 2 trapping localities are 2 km. W Porculla Pass, 6500 ft., Depto. Lambayeque,

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Porculla Pass, 7000 ft., Depto. Lambayeque, Peru
and Porculla Pass itself.

August 18

Checked our traps. Ray & I didn't catch anything in the live traps we put out. Dr. Koford got an Oryzomys and 3 Phyllotis andinum in his snap traps. Last night it was very windy - so much so that one of the aluminum poles to the tent bent & broke & the tent fell. It is still very windy this morning. We will break camp and move back down the mountain a ways to check on other traps. Last night there were whipsnails flying, ~~lightning~~ fireflies, and I heard bats calling.

9:00am. I found that my ♀ Paralomys gerbillus gave birth. I don't want to disturb the family too much, so I haven't counted the number of young. Yesterday I separated the live Paralomys I had because the night before they had been fighting. The male had bites all up & down its tail, and the baby tailless one I put in there had been killed. I suspected the female was about ready to give birth.

9:30am Checked my 7 snap traps and found 1 mouse in a trap set under a tangle of roots & dried brush on the bank of the dried stream. It is steep & rocky here. The mouse appears to be some sort of Oryzomys. It is a darkish buffy color and has a fairly thick, though sparsely haired tail. The ears are small and

2

100

100

Aug. 18
(cont.)

2 km. W Poculla Pass, 6500 ft., Depto. Lambayeque, Peru
here is a buffy streak near the pectoral region
but on the right side. The fur is somewhat
short and lax. Dr. Koford caught 8 mice — 4
Phyllotis andinum, 1 ^{Marmosa} *abodon* (very dark), and 1 large
Oryzomys-type. Ray caught 2 *Phyllotis* + 1 *abodon*.
The large mouse that Dr. Koford caught is still alive.
It has a very long tail, is dark yellowish in color,
and has small ears + a rounded face. Perhaps
it is a jungle-type mouse on the west side of the
Andes. Ray + Dr. Koford shot several lizards.
I injected the 4 live mice and we put up most of
the other mice. I checked my *Paralomys* and saw
3 young. Apparently the little size is fairly small. Dr.
Koford caught 2 pregnant females — one with 3
embryos + one with four.

8:00 p.m. We set traps again. We are camped about
1.5 km. above our trapping place (which is 2 km. W
of the pass). Between our old trapping place + our
campsite Ray set about 30 small shermans along a
creek fence. Dr. Koford + I each set 34 snap
traps up the brushy, rocky slope where he
had caught the *Phyllotis*, *Marmosa*, *abodon*, +
jungle mouse. The vegetation is fairly thick
there, with thorny bushes and bamboo and
other growth. I set at holes within rock
piles, fallen trees, + tree stumps. We got
~~done~~ done at around 6:30, when it was

August 18
(cont.)

2 km. W Toroculla Pass, 6500 ft., Depto. Lambayeque, Peru
getting dark. We were walking down, when
we saw that one of Dr. Koford's traps set at a small
hole, had caught something. He picked up the
trap, thinking there was a black Akodon of some
sort in it, and was about to grab it when we
realized it was a huge spider, still alive. Its
body is about $3\frac{1}{2}$ inches long, a very dark
brown with some dull yellow in it. We set
up the bat net about 50 yds. down the slope from
where we are camped, in a little saddle. I
heard many bats, but they seemed very high up.

August 19

Nothing in the mist net. Last night it became
very windy. We checked our traps. Dr. Koford
caught 12 mice - 9 Phyllotis (andium, probably) and
3 Akodon. Ray caught 2 live Akodon, and I
caught 8 Phyllotis and 2 Akodon, usually in
holes in jumble of rocks. Perhaps there are 2
kinds of Phyllotis here. I got some that were slightly
smaller than others or had more distinctly bicolored
tail. Tail lengths seem to vary, also. Some of the
specimens will be discarded: Akodon ♂ 30g, testes 4×8 mm,
Phyllotis andium: ♀ 24g., uterine scars, ♀ 21g - nulliparous,
♂ 21g. testes 2×3 mm., ♂ 18g. testes 2×3 mm, ♀ 14g. immature,
♂ 9g., testes 2×3 mm.

21 km. E, 7 km. N Olmos, 2300 ft., Depto. Lambayeque, Peru

We stopped here at 11:00 a.m. and went to hunt
lizards + birds. I noosed a lizard (MAL 305)



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21 Km. ~~W~~E, 7 Km. N Almos, 2300 ft., Depto Lambayeque, Peru
August 19 (cont.) that was on a small boulder near the stream here.
It has a row of spines down its back, has a patch of yellowish brown on its forehead, & black spots & marks underneath. The chin has a large black spot. The area here is somewhat dry, with trees & brush. There are lots of ~~the~~ leaves & branches covering the ground. There is a small creek that has little fish and tadpoles in it. Various doves, wrens, woodpeckers, & flycatchers are seen & heard. We've decided to camp here & set up 3 mist nets. There is evidence that this stream was once a good-sized river. There is considerable creek bed exposed. Furnarius is here, and I can see one down in the leaf litter of the stream bed flipping the dried leaves. Its golden tan color blends in well with the dried leaves. It twitches its tail considerably as it flips the leaves.

5:00 p.m. Caught 2 ^{dovey-creepers} ~~little warbler-like birds~~ in my net. They are the same species (perhaps a pair). They are dark grey on their back, getting darker on the head, where there is a white eye stripe, and yellow on the rump. There's some white on the ~~old~~ wings. The chin is light grey & the breast yellow. (MAL ³⁰⁶~~328~~ + 307)
Dr. Kopad and Ray have their mist nets placed over the creek, and I have mine

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21 Km. E., 7 Km. N Olmos, 2300 ft., Depto. Lambaheque, Pem
Aug. 19 (cont.) under large figus trees & mesquite-like
trees.

8:30 p.m. I hear some bats and there are
also a lot of insect noises. The night is warm
and windless. There aren't nearly as many
flying insects here at night as there were lower
down by the red bridge. Today we each set
about 22 or 23 snap traps. Ray & I set
ours along rock & brush fences placed between
small areas of dried old cultivation & the stream,
and Dr. Koford set his up a small canyon.

9:30 p.m. went out gecko hunting. Dr. Koford caught 3
and I caught one. They were on small boulders
with lichen, usually near brush or large
boulders. Seems we may have 2 species. I found a
large toad jumping through the brush and leaf
~~litter~~ litter about 25 yards from the creek. It
puffed up ~~and~~ ^{as} I held it. I released it, as
it was the same kind as we found abundant
at the iron bridge. The geckos we got we
all around the same vicinity, and there didn't
seem to be any others anywhere else we looked.
I was checking my bat net, when I heard a
little rustling in the brush near a large
boulder. I looked around with my flashlight,
and half-way up the boulder was a mouse
staring at me. It was apparently a medium-sized

Aug. 19
(cont.)

21 km. E, 7 km. N Olmos, 2300 ft., Depto. Lambayeque, Peru
Phyllotis. I noticed it had a reddish rump
part, like magister tends to have. Unfortunately
I couldn't get it. Ray caught a large Phyllostomid
bat in his net, like the ones I got at the
bridge.

Aug. 20

Nothing in mine or Dr. Koford's mist nets. Ray
had 6 more of the Phyllostomid bats. His net
was in a little construction in the stream.
Neither Ray nor I caught any mice along the
fence barrier. I 2 honeycreepers I put up that
I got yesterday in my net were a male + a female.
The female had a little caterpillar or worm or
larvae in her mouth, about $3/4$ in. long + black +
yellow striped. Dr. Koford caught 2 Phyllotis andinum
at the base of a rock outcrop on a dry hillside with
cactus and open trees 100 ft. from the canyon bottom.
All 7 of Ray's bats were ♀♀. Perhaps they go around in
segregated bands. One had an almost full-term embryo.
I put up another that had a younger embryo (43 mm
MAL 310). I checked on the ♀ Paralomys. She had
eaten her 3 babies, leaving only the heads.
12:30 pm. We drove back out towards Motupe. At
about 3:00 pm. we found a place to camp near
Motupe at the base of Cerro de la Viña. There
is quite a lot of exploding granite here,
and we are looking for geckos. I set 23
snap traps at various holes around rocks

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Aug. 20
(cont.)

4 mi. SSW Motupe, 400 ft., Depto Lambayeque, Peru
and bushes. There isn't much mouse sign here. The area is dry + brushy + bouldery, and the hill is prominent in a flat grayish land. We each put up a mist net — Dr. Koford and Ray down at the base of the hill and mine a ways up. We saw little bats (perhaps Tomopeas) flying at dusk.

8:00 pm Went out gecko hunting. The geckos here are small and fast. We found them on the ground near rocks as well as on the rocks + boulders themselves. I caught 4 and Ray got 3. Dr. Koford caught ~~4~~ 3.

August 21

This morning we each had a little Phyllostomid bat in our nets. It is a nectar-feeding kind with a long rostrum and long tongue (MAL 312). Checked our traps. Ray didn't catch any mice. I had a large gecko in one of my museum specials set a hole that went under a rock. In another trap placed at a hole in the dirt going beneath a rock I caught a small immature Phyllotia annularis by the tail. Of the 5 geckos I caught, I think there may be 3 types. There are the small fast ones that are fairly indistinct as far as coloration ^{or} skin texture is concerned. Then there was one I got going down a dirt hole. It was larger, had some rows of large scales + a zebra-striped tail. The one I caught in the snap trap may be yet

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August 21
(cont.)

4 mi. SSW Motupe, 400 ft., Depto. Lambayeque, Peru
another kind, with a different pattern of large scales & differently marked. Early this morning we saw a small gray Dusicyon about 50 feet from our camp up on the hill among the boulders. The birds are not very abundant here. I've seen some doves & parrots. Left at about 12:00 noon and drove back towards ~~Motupe, 400 ft., Depto. Lambayeque~~

2 mi. SE Monrope, 100 ft., Depto. Lambayeque, Peru

We drove off the road near a cornfield in an attempt to get closer to the sand hills. We got closer to the sand hills, but we also got the car stuck in the sand. We spent the later hours of the afternoon trying to get it out, to no avail. Set up a 100 ft. mist net on top of ~~the~~ a sand hill, above a saddle. Ray set some small Shermans along a brush fence and I set 23 snap traps on sand hills where cappariz bushes were growing. 8:00 pm We went gecko hunting. Dr. Koford & I each got a gecko. Mine was running along the rocky twiggy sand near the edge of Cappariz bushes. We passed by one of my traps and there was a Paralimys gerbillus in it. I heard bats, but none were caught.


August 22 8:00 am Still trying to get the car out. Nothing in the net. Ray caught 1 mouse, and I got 7 more. Only 2 of my mice are very big, both males. The mice were gotten underneath the bushes in the sand,

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August 22
(cont.)

2 mi SE Morrope, 100ft., Depto. Lambayeque, Peru
~~near~~ near top of the sand hill, and I got one
large male at the entrance to a sand burrow
made in the bank. It looked like a lizard
burrow:  $\times \frac{1}{3}$

8:05 am Finally got the car out. Discarded Paralomys:
♂ 7g., ♂ 9g., ♀ 9g. - all non-breeding. 2 alcedin
specimens (MAL 323 + 324)

4 mi. ESE El Espinal, 2000ft., Depto. Cajamarca, Peru
Got here at about 6:30 p.m. The valley of the
Saña River is fairly lush & populated. Sugar
cane & rice seem to be prevalent crops. There
are irrigation ditches and a few places where the
river has been dammed up. The surrounding hills
have lots of cactus growth. We had a hard time
finding a place to pull off the road to camp, so
we gradually went higher & higher. Still below
2000ft. the vegetation changed to a very lush,
jungly moist vegetation. We are camped now
and have put up a mist net. I set 20
snap traps among the vegetation & rocks near
the little stream and up a steep heavily vegetated
hill. Dr. Koford set 10 traps on the other
side. At about 7:00 we found a pygmy owl
in the net. We are keeping it alive a while.
Checked my traps. I caught 1 mus in a
trap set near the stream amongst dense
viney vegetation. Dr. Koford also caught a

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2000ft
4 mi. ESE of El Espinal, Depto. Cajamarca, Peru
Aug. 23 (cont.) Mus. Last night it rained, so many of my traps were sprung. In the mist net this morning was a Phyllostomid bat, about medium sized, having a reddish color to its fur. This morning it is overcast but clearing and warm and humid. The Mus I got + discarded was a ♂ 12g., testes 4x7mm. We are camped about 50 yards above a fairly good-sized rushing river, near the bend in the road. The pygmy owl clacks. In the process of ~~take~~ photographing it, the owl flew the coop, so to speak. It escaped.
10:00 am We are leaving this camping site + heading up the road towards Talis. We want to get to the forested area around Hacienda Talis that Maria Koepke wrote about + studied birds there.
35 mi. WNW Cajamarca, 6000 ft., Depto. Cajamarca, Peru
We drove about 8 1/10 mile beyond the Hacienda Talis, and came to a clearing where we made camp. The road up here is very rough. We averaged only about 5 mph on the bumpy, rocky, rutty road. It became progressively more humid and green + thickly vegetated as we came up. We are now at 5900 ft. I walked further up the road for about 3 miles, but didn't come to any different habitat. I got 2 lizards with a large rubber band. Birds could be heard, but were difficult to see. I saw some yellow ones with some black on the head.

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aug. 23 (cont.)

35 mi. WNW Cajamarca, 6000 ft., Dept. Cajamarca, Peru

There is an abundance of trees (large-leaved) as well as much ground vegetation, vines, grasses, bushes, etc. It rained off and on starting at about 3:00. At about 5:00 it was raining very hard. I put up a 30 foot bat net at the edge of the forest in the meadow clearing where we are camped. We each set snap traps in various forested areas, under rocks, logs, & tree trunks. I heard tinamous as I was setting my traps.

9:00 pm I walked out into the jungle to look for eye shrim and to get a clacking animal (probably a frog). Didn't see either. There's an abundance of insects, mostly moths, ~~to~~ with glowing eyes. The wind is coming up a little, and it rains a few drops occasionally. Everything is very wet. Nothing in the snap traps I looked at. During the day there were a lot of assorted butterflies around, many with luminescent markings on their wings.

aug. 24

Checked my traps. The first 2, set about 3 feet from each other amongst mossy boulders, thick humus & ferns, ~~we~~ had an Akodon each. This Akodon appears to be very dark, something to be expected of this dark tropical forest. Ray caught an Akodon and what appears to be an Oryzomys. Dr. Koford had a Phyllostomid bat in his net, similar to

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35 mi. WNW Cajamarca, 6000 ft., Depto. Cajamarca, Peru

Aug. 24 (cont.) the one caught at our last locality. Nothing in mine or Ray's nets.

8:30 am. I have hiked horizontally across a steep slope along what is probably a cow trail. The vegetation is extremely thick. There are roots & branches hanging down & all sort of vines and ferns on the ground. I've come to a large waterfall. Heard tinamous this morning. Some of their calls are 2-parted whistles (low --) and some are 3-parted (---). The jungle is very wet, and I suspect it is always like this. There are scattered clouds in the sky and a slight wind. Last night it remained fairly warm & rainless, though windy. Dr. Koford checked his traps and caught 2 large rats, probably *Oryzomys*. One is reddish & the other, possibly a juvenile of the same species, is grey. These were caught in a log and within the exposed roots at a ~~large~~ tree trunk. Dr. Koford talked to the man that lives near the Hacienda Taulis. Apparently this road goes up over the mountain, where one can get to either Cajamarca or Chaper. The man also said there were bears (probably speckled bear) and lions (jaguarundi?) in the forests here. We will trap for bats around the houses ~~later~~ later on this afternoon. Dr. Koford had 2 ~~more~~ more mice in the remainder of his traps - an Akodon and another kind of *Oryzomys*.

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35 mi. WNW Cajamarca, 6000 ft., Depto. Cajamarca, Peru

Aug. 24 (cont.)

11:00 a.m. I set my traps up a little trail that branched off the road. Seems like there is a lot of good habitat and holes. Things for mice to live in. I set traps in hollow logs, beneath logs + boulders, and around tree trunks.

12:30 p.m. I skinned my 2 animals (MAL 328 + 329). It began raining slightly. The bat Dr. Koppe got this morning is a Desmodus rotundus. It is larger than the other bat, also grayer + darker. Neither have either tail nor much tail membrane. If this area is a relict of as formerly were extensive forest, then probably the relict animals would be found in woodier habitat. So far, the mice caught in rocky habitat - under boulders, etc. were Akodon, while the rat-type animals were gotten under logs, in hollow logs, and in tree buttresses. It has been raining off and on all afternoon, sometimes very hard.

3:00 p.m. I walked about 1/4 mile up the road and off another side branch (cow path) that led through the forest to a fenced field. Along the same kind of dense vegetation - rotted logs, tree trunks, + boulders as I set my snap traps, I set 26 large shermans. At 4:00 p.m. mosquitos came out, as yesterday.

4:30 p.m. We walked 5/10 mile back down the road and set 2 bat nets - one 40 ft. and one 18 ft. near buildings which were said to be inhabited by bats.

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Aug. 24 (cont.) 35 mi. WNW Cajamarca, 6000 ft., Depto. Cajamarca, Peru
and around which we saw possible sign of bats. On the walk up I saw a small frog in a rain puddle in the road + Dr. Koford caught it. In his net was a hummingbird. Nothing in the 2 nets I have up. We saw a small weasel-like animal cross the road as we were walking down towards the Hacienda. It came down from a ferny patch of growth and down the bushes side. Perhaps it was a tyra. I saw that it was dark and about the size of a cat.

August 25 Dr. Koford and I walked down to the Hacienda to check the nets - nothing in them. We took them down. I checked my traps and found a small rat-like animal (perhaps *Oryzomys*) in a snap trap placed at the base of a half-rotted tree. I also caught a live rat in ~~the~~^a large sherman I put at a ^{corner} tree buttress where there were several openings. I will inject it and take chromosomes. Last night there was a large *Phyllostomid* in Ray's net. It has light streaks on its head and a white narrow dorsal stripe. This morning I found a small *Phyllostomid* in my net. It was probably there last night, but I didn't notice it because it was at the very edge of the mist net, by one of the loops attached to the pole. This morning I saw a relatively small, light-

Aug. 25 (cont.)

35 mi. WNW Cajamarca, 6000 ft., Depto. Cajamarca, Peru

colored (grayish tan) pair of birds with long straight bills. They were woodpeckers of some sort and were pecking at some branches of a tree. I also saw a pair of very large, hawk-sized birds that were black with some white + red horizontal stripes on their tails. Ray shot a couple of birds this morning - one fluorescent green with brownish head and goldish chin, and one russet brown with yellow cap feathers. The birds here are very colorful but often are difficult to see. Ray got 1 mouse in his traps last night - an *Oryzomys*-type animal. Dr. Koperd got another vampire bat, a hummingbird, and 4 of the *Oryzomys*-type rats (1 alive). I took the large box of folding shermans about $\frac{3}{4}$ mile up the road, where a second creek crosses the road. Here it was very jungle and moist. I wanted to climb up the slope to where the forest looked virgin. I started climbing up along where the gushing little stream was going, but soon realized I couldn't get much more than 100 ft. up. The vegetation was very thick with ferns, trees, prickly, large-leaved plants, ~~so~~ vines, and lots of rotten logs. Mosses were growing everywhere, and the wet humus + leaf litter was very deep. After stepping through a few rotted logs, I decided to concentrate my traps closer

35 mi. WNW Cajamarca, 6000 ft., Depto. Cajamarca, Peru
August 25 (cont.) to the road. I set 21 shermans at tree buttresses, holes among rocks, under logs, and above logs. Then I came back to camp, injected mine + Dr. Kofud's mice, and took 15 folding shermans and 10 snap traps back down to the Hacienda Iaulis, where I set them around boulders in a meadow there. The cows were very curious as to what I was doing, and I had problems with them closely following me and setting off the traps I had just set. One cow tried to ram me, but I blocked it with the trap box. I had left all my snap traps + large shermans set last night out, so I have about 85 traps set now for a mile on either side of camp. In the pasture at the base of a large tree I saw 4 large bird eggs:  about 3 inches long. They were white with sparse tannish ~~sp~~ marks. Perhaps they are turkey eggs. There was no hint of a nest, and the eggs were cold.

3:15 pm. I guess the chromosomes of the *Oryzomys* were just fated not to be taken. After the 20 minute citrate period I discovered that the centrifuge did not work. I could not find the hand centrifuge, so I thought maybe if it was the batteries' fault, I could run the tubes on the car battery. It still didn't work. The centrifuge itself was at fault. Apparently it got knocked around in the car. By the time it got fixed the cells had been in citrate 30-40 minutes, but I

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35 mi. WNW Cajamarca, 6000 ft., Dept. Cajamarca, Peru
Aug. 25 (cont.) decided to try ^{completing} ~~completing~~ the process anyway. The centrifuge ran somewhat weakly. After 15 min. in the fix I attempted to spin the cells down. This time something awful happened. One whole test tube holder on the centrifuge - the one with a TT, spun off and flew at me, hitting my freshly finished specimen first and bending the leg + tail wires, then getting me full of fix and cells. The other test tube was not to be found and was ~~a~~ mysteriously gone until I looked at the bottom of the centrifuge tube and found the remains pulverized.

8:00pm Checked my 2 nets and found a bat in each. It is a rainy foggy night. Each had chewed a large hole in the net. In the new net were at least 2 other large holes, so I guess there were bats in there but they managed to free themselves. These bats (MAL 334 + 335) are the same as the one I found in the net this morning. They all have a characteristic odor. Bats seem to be fairly active tonight, even though it is rainy.

Aug. 26

Checked my traps. Down at the pasture I had 2 small Oryzomys in snap traps, one alive by the tail. These were caught among large boulders. The pasture is very moist, and parts of it are marshy. A couple of my traps - both large shermans + snaps, were set off by slugs and cows. I caught nothing in the 21 traps I set up around the

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35 mi. WNW Cajamarca, 6000 ft., Depto. Cajamarca, Peru

Aug. 26 (cont.)

second creek where the vegetation was thick and wet and the trap site steep ~~at~~ with leaves covering the mossy rocks and rotten logs. In the line of large shermans that I left out for the 2nd night I had 2 live animals - one an Oryzomys-type under a log, and the other an Akodon in a hollow tree stump. In my ~~at~~ 22 snap traps I caught 2 Akodon under logs, and maybe another kind of Oryzomys, also under a log. Dr. Kopfer caught 3 Oryzomys types and Ray caught none. We will prepare specimens, then break camp and move up to the top.

3:00pm. We left our campsite and started up the road. It was still rocky and hard going. It had rained off and on ~~at~~ all afternoon. As we got higher, the road got muddier, and we had trouble in a few spots and had to push. We averaged only about 5 mph. The habitat remained much the same for a long time. There were scattered fields or corrals, but largely uninhabited. We reached a fork in ~~the~~ the road and took the left hand road, because the one to the right looked like it went up to a house. This was at about 7000 ft. The slopes became brushier and grassier and we rose ~~off~~ out of the jungle vegetation to more cleared areas and more cultivation. We stopped at a shack and asked a man if we were on the right road.

~ 10 mi. NW San Miguel, Depto. Cajamarca, Peru

August 26 (cont.)

Apparently we were. This road goes to San Miguel, where there is supposedly a junction of the roads to Cajamarca and Chupen. He said it was 2 hours to the junction. From then on the road was not as steep, but still narrow and much muddier with fewer rocky places for traction.

It was still raining. At 6:45 p.m. we stopped on the road and decided not to go on. We pitched the tent right on the road. It stopped raining shortly afterwards. There were frog or toad calls at dusk. We are at about 9000 ft. now.

On the way up we saw some birds active, especially when it wasn't raining. Often birds of different species flew together.

9:00 pm It has been sprinkling on and off since dark. It looks like it may clear by morning, however.

August 27

It is a clear sunny, warm morning. We have hunted some birds. Ray got some nice Tanagers with blue heads and green backs and a rusty and grey flycatcher. I shot some sort of flycatcher, but it flew just as I was about to pick it up. It flew up about 20 ft. and over above some thick brush, where it fell. As it was up in the air it was ~~also~~ buzzed by a hummingbird. As I crawled through the bushes looking for it I saw a yellow frog making its way underneath the wet, green & yellow leaves. (MAC 343). It is

~10 mi. NW San Miguel, 9000ft., Depto. Cajamarca, Peru

August 27 (cont)

bright yellow beneath + on the forelegs, and an olive green above. ^{it smells like fresh green peppers.} ~~It~~ I didn't find the bird. The vegetation is somewhat bushier & woodier, though lower than that at 6000ft. This area has been cleared a great extent. Apparently all the land this side of the river belongs to the Hacienda Taulis.

9 mi. NW San Miguel, 8000ft., Depto. Cajamarca, Peru

10:30am We left the "campsite" and pushed on. The road remained muddy, but after a couple of especially bad places we got through to where the road had short grass. When dry, this offered good traction. We continued on the road and noticed a couple of what appeared to be forks, but we kept to the left road heading down, because tractor tracks went that way and we were under the impression that the tractor came from San Miguel. There were no other vehicle tracks. We got down to a valley but had trouble getting up a muddy hill after fording the river (about 20ft. wide). When some small boys came along we found out that we were on the wrong road and that this road went only to a mine. It was 2 miles back up a slick, muddy, grassy, curvy & steep road to the junction we should have taken. Knowing the car would never make it, we decided to stay here at this pasture

(cont.)
Aug. 27, 1969

9 mi. NW San Miguel, 8000 ft., Dept. Cajamarca, Peru,
and await help. There could possibly be a pickup
coming from the mine. At 1:00 pm it began to
rain. We are in a pasture of short grass. This
whole area is inhabited, though sparsely, and
there are nearby houses. Along the cut of the
bank are large holes made in the muddy
earth. Perhaps these were made by a mammal.
There are also large burrows similar to those
on the ground. If we are stuck here tonight we
may get a chance to trap. At 3:00 pm Dr. Koford
and I started out back the road we came from.
The people here ^{said} ~~saw~~ it was about a 3 hour walk.
After 2 1/4 hours we had walked past where we camped
last night and got to a little shack where we talked
to the man. We wanted to get to Palmitos, where
the only car around was supposed to be. The man
said it was very far - another 3 or 4 hours.
By then it was already 5:45 pm. The man offered
us horses tomorrow to go to Palmitos, so we
decided to walk back to camp, and try to
get out tomorrow and if we can't, take him up
on his horse offer. Apparently San Miguel is
still 3 or 4 hours away by car and the road
is very bad with some washed-out bridges.
We have only less than 5 gallons of gas, so our
only choice is to go back by the road we came up.
It rained for only about an hour and a half

9 mi. NW San Miguel, 8000 ft., Depto. Cajamarca, Peru
Aug. 27 (cont.) Today. If our luck holds out perhaps it will be dry enough tomorrow for us to get out. Ray put up a bat net. Along the road Dr. Koford caught 2 more frogs like the ones I got today. They make a high-pitched squeak.

Aug. 28


This morning it began to clear. At around 9:00am we began our attempt to get up the road. To save time in case we couldn't make it, I began walking up the road to the house of the man who offered us the horses. Dr. Koford was to follow shortly. In 2 hours I arrived, and before the man got there, Dr. Koford also arrived. We talked to him and found out he had sent his sons back on the road to look for us. So we were about to set out by foot to Palmito (3-4 hours distance) when we heard our car coming. Apparently Ray had gotten up the hill with the help of 4 men, and the rest of the road was dry enough. We drove on towards Palmito to get gas from the hacienda, but our rear wheel went off a bridge over a small stream at a curve. We jacked up the car and shoved it back onto the road. During this process a jeep of the Ministerio de agricultura came by from San Miguel - a trip they make only every 2 months. They gave ~~us~~ us gas and we continued. The man with the horses had said it would not rain today, and it hasn't. As we got down below the road was dryer, though rockier, and we hit ~~an~~ ^{an} especially large rock, knocking 2 holes

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Aug. 28 (cont.) 9 mi. NW San Miguel, 8000 ft., Depto. Cajamarca, Peru
in our already terribly misshapen gas tank. We patched this with soap.

3 mi. N Oytun, 1000 ft., Depto. ^{Lambayeque} ~~Cajamarca~~ Peru
We arrived here at about 6:30 pm. It is a little valley with gentle hills of rocks and tall cactus (up to 9 or 10 ft. high, each arm 4-sided , the sides curving inward). Ray set 20 small shermans, Dr. Koford set 17 snaps, and I set 20 snaps and 20 small shermans among some rocks, Capparis bushes, and under cactus.
11:30 pm. Dr. Koford and I went gecko hunting. Altogether we found 14 geckos and 4 lizards. The geckos are probably all the same species. They are small and active. We didn't see any on the flat, but up the hill, generally near the tall cactus, they were fairly numerous. I heard bats calling all the time we were out. The geckos may be using the decaying, porous parts of the cactus, or the exposed root portions for shelter. Last night was warm and not too windy. The lizards may be nocturnal, or we may just have scared them up. The flat is pretty heavily grazed, has finer sand and fewer rocks.

Aug. 29 6:30 am. Checked our traps. Ray caught nothing, Dr. Koford caught a young Phyllotis auricus under a Capparis bush, and I caught a small auricus in a rock pile. Six other of my snap traps were

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3 mi. N Ayacucho, 1000 ft, Depto. ^{Lambayeque} ~~Cajamarca~~, Peru

August 29 (Sat) pulled and sprung, one with a tuft of white hairs about $\frac{1}{2}$ in. long. Perhaps the donkeys did it, or maybe a fox, though tracks of foxes aren't very prevalent. There are loud finches calling raucously from the cacti. The most abundant birds are hummers. The large dark variety seems to fly close to the ground, often in small flocks of about 4. There is a smaller, brownish green one with a white breast, also. The amius I caught this morning was half eaten by ants, so I discarded it. It is a young ♀, 8g.

5 km. NE Pacasmayo, 200 ft., Depto. La Libertad, Peru

Arrived here at about 4:00 pm. It is open flatland with dry rocky hills surrounding it. There is essentially no vegetation outside the boundaries of a mesquite fence. Inside this large enclosure are mesquite trees and other bushes. We've come here mainly because it is a convenient stopping place before we get to Trujillo, and also to get birds and bats. The ground is pretty open, and ~~there~~ doesn't seem to be much suitable habitat for mice, except maybe along the brush fences. I set 23 snap traps along the brush fence. There was no sign of mice, but at a few places there were what appeared to be holes through the brush or in old caked mud. The area is heavily grazed and the sand fine. I set up a 30 ft. bat net across the fence where some low

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- Aug. 29 (cont.) 5 Km. NE Pacasmayo, 200 ft., Depto. La Libertad, Peru
mesquite and bushes were growing. I saw a turkey vulture, a buto, a small dove, a vermillion flycatcher, and some small greyish birds with white outer tail feathers this afternoon. Tomorrow we will go to Trujillo to get our gas tank fixed and the tire that went flat today mended. It was windy until about 7:00 pm tonight when the wind died to a breeze or occasional gust.
- Aug. 30 ~~Aug.~~ 9:00 pm Went out to look for geckos up the the dry, barren, rocky hillside. I found 5 (MAL 355-359) and Ray got 3. Checked my net a couple of times and found nothing in it, although I hear bats calling. In my mist net this morning was a whippoorwill and something that looks like a seedeater. (MAL 360 + 361). I caught an Oryzomys in a pile of old, cobwebby brush along the fence of mesquite under a large tree. There was a little hole made through the brush and I had set the trap there. The area smelled very ratty. Dr. Koford didn't catch anything in his snap or net, and Ray didn't get anything in his net. I put up the whippoorwill + skinned the seedeater + Oryzomys, and we left at about 9:00 am for Trujillo. Arrived in Trujillo at 11:30 am and ran various errands. Today is some holiday, however (Festival de Santa Rosa) and we couldn't get the car fixed. We left Trujillo at 2:00 pm. and ~~east~~ headed east on the road



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Aug. 30 (cont.)

5 mi. SW Otuzco, 8000 ft., Dept. La Libertad, Peru
towards Santiago de Chuco. We took a little
road towards the pueblo of Huacabay and
~~we took a~~ ^{are camped} at a turnout on the road, 5 mi. SW
Otuzco, 8000 ft. The hills here are cultivated
to a limited extent with some oats, and there
is evidence of grazing sheep or goats; however,
there are rocks and brush and good habitat
for mice. At 8000 ft., we have a chance of
getting magister. I set 21 small shermans and
23 snap traps up a rocky, brushy canyon.
Dr. Koford set his snap traps and 7 ~~8~~ small
shermans in ^{brush} grass and rocks. Ray set his
snap traps along a rock wall. The weather
is warm and windless. This afternoon on
the way up here it sprinkled a little. We
got here at 5:30 pm, after having been on a
fair gravel road. The birds seemed just about
ready to settle down to roost, as I was setting my
traps. Dr. Koford thought he heard the gurgling sound
of a whippoorwill.

Aug. 31

6:30 a.m. Checked our traps. Ray caught 4 mice,
all probably Phyllotis andinum. Dr. Koford caught 9
mice, possibly all andinum, but maybe a young
magister. I caught 11 mice - 5 akodon
boliviensis, 5 Phyllotis andinum, and 1 definite
Phyllotis magister. All here I caught beneath
~~at~~ large rocks, usually with dry leaf litter

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Aug. 3
(cont.)

5 mi. SW Otuzco, 8000 ft., Dept. La Libertad, Peru
or dry brush surrounding it. The magister
was down closer to the bottom of the canyon.
10 of the mice were caught in snap traps, and only 1
Akodon, in a brushy rock pile, was caught in a
small sherman. I'll discard 4 mice. 2 juvenile
andium (♀ 12 g., ♀ 16 g.), and 2 small Akodon (♀ 16 g.,
♀ 16 g.) The magister I got is the northernmost
extension of the magister range, exceeding the magister
in the Cosma valley by about 50 miles.

11:00 am I caught a lizard along the road (MAL 379). We
are getting ready to leave this area for now and drive up
towards Santiago de Chuco. We'll probably return if there are
no magister higher up.

10 mi. WNW Santiago de Chuco, 13000 ft., Dept. La Libertad, Peru
We got here at about 4:30 p.m. The pass here is much
like the area around Callan Pass. There ~~are~~ is ^{predominantly}
ichu here in this puna zone. We set snap traps
down the hill towards the creek. There are fairly
large rock formations there, and I set my traps
in spaces & holes created by them. I found what
look like viscacha droppings, and there are
small caves that have these droppings in them and
smell very animally. I set 1 small steel trap
at the entrance of one. There is a slight wind
and it is cool here. The little creek has clear
water, although there is not much water. The
drainage on the side of this pass which we came

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10 mi. WNW Santiago de Chus, 13500 ft., Dept. La Libertad, Peru

Aug. 31 (cont.)

up is polluted by the mining going on. After we left our campsite this morning we got pretty quickly to the ^{dry} grassy ichu zone. It is fairly heavily grazed. I set up a mist net nearby camp

9:00 pm Dr. Koford checked four of his traps and had an Akodon boliviensis in one set under a small rock shelf with small ferns growing in it. I hear the clacking frog again. No sound of bats or insects up here. Today Dr. Koford shot a kind of plover and a snipe up in this kind of ichu.

Sept. 1

Nothing in my mist net. I checked my traps and caught 2 Phyllotis pictus (perhaps one is not a pictus, but something else). The definite pictus (MAL 372) was caught in a square hole about 4" x 5" that ran alongside the creek. The other "pictus", (MAL 373), a smaller animal but with a longer tail than the larger mouse, was caught in a snap trap placed in a small cave, about 2 1/2' x 3', that had viscacha droppings in it. About 4 feet from this cave was a smaller cave that smelled strongly of animal. It was at the entrance of this where I set my small steel trap, tied onto a 5 lb. rock. This morning the whole set, rock and all, was gone! The smell was stronger, and probably that of the hog-nosed skunk. Darn. I've learned my lesson and will secure my drop traps better in the future. Dr. Koford had an

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Sept. 1
(cont.)

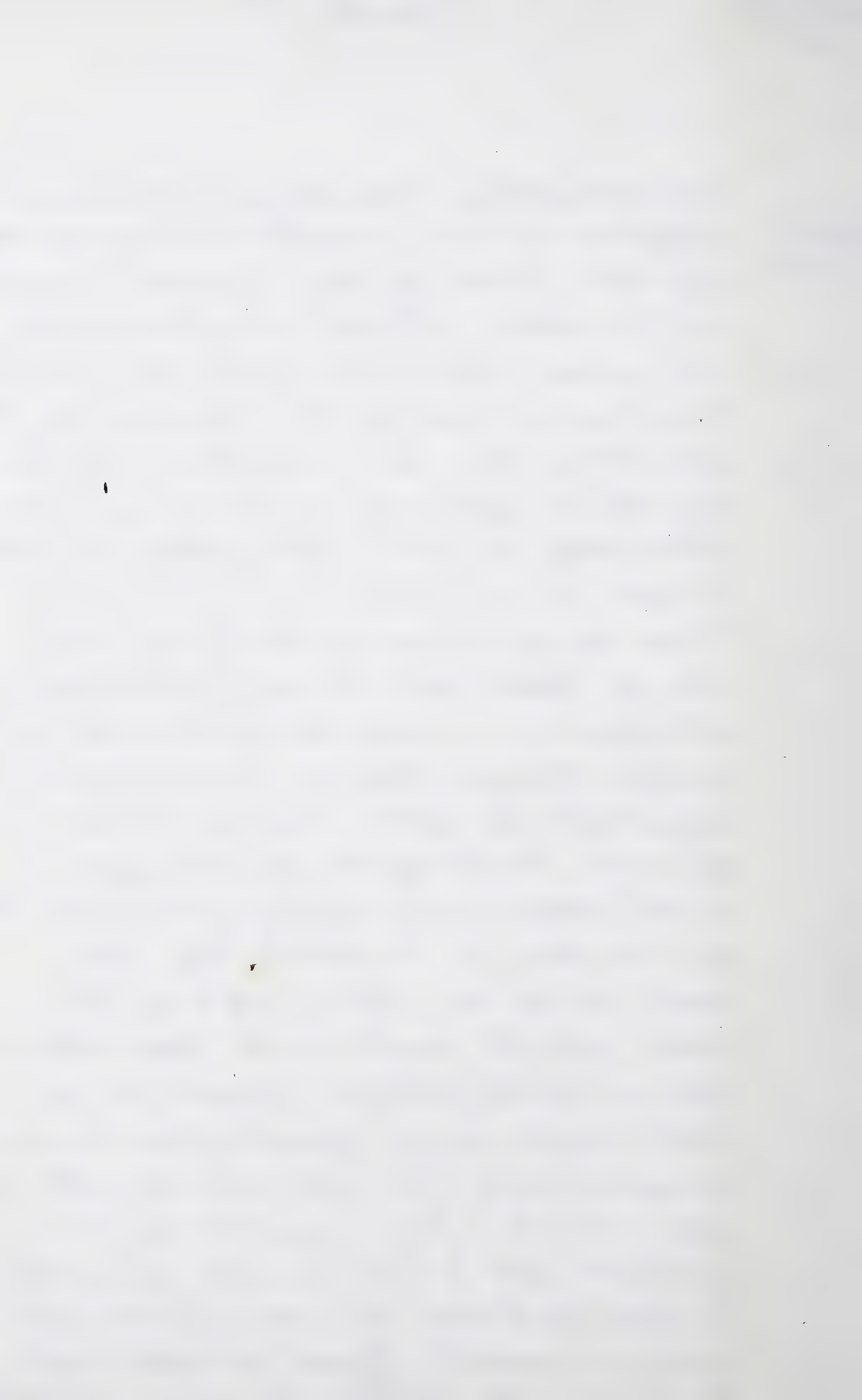
10 mi. WNW Santiago de Chuco, 13000ft., Depto. La Libertad, Peru
Argyromys in ~~his~~ one of his traps set in a small cave this morning. Ray caught ~~an~~ Calomys scottellus and a Phyllotis pictus in nearby rock piles. Last night was cool and slightly windy, but this morning was not frosty. Ray shot a finch and a furnarid here. Further up the road he got a seed snipe. We broke camp at about 10:30 am and drove 4 miles up the road. The habitat is much the same. There doesn't seem to be a definite pass, but much of the road extends at the highest point. We were camped at Km. 250. We drove back to Km 103 where it is a little crasier, and made camp.

15 mi. W Quiruvilca, 11000ft., Depto. La Libertad, Peru
3:30 p.m. I set 23 snap traps and 21 small shermans up and over a steep hill $\frac{1}{2}$ mi. from the campsite. The habitat is mainly bunch grass and rocks + rock formation and a few bushes. Alternating snap and live, I set the traps up the hill and down the other side, placing them in crevices under rocks and holes in the ground. At the bottom on the other side was a small, scimpy rock corral, where I set a few traps. Dr. Koford set his traps in the brush. He found a mossy understory with mouse droppings + trails. Ray set snaps + small shermans along the road at a rock + mud wall. I saw some mouse

Sept. 1
(cont.)

15 mi. W Quiruvilca, 11,000 ft., Depto. La Libertad, Peru
droppings and some viscacha-like droppings along my line. Higher up today I caught 2 frogs in the creek. They are a very dark brown and swim under mud + rocks in the water. Here I saw 2 lizards in the ichu and heard the clacking frog. The temperature is comfortably cool with a slight breeze. Our tire went flat twice today. We had 2 flats yesterday, too, although the road isn't very bad.

9:00 p.m. Dr. Koford and I went to check his traps. Nothing in them yet. Walking back on the road, Dr. Koford saw what appeared to be a dark bird up on the bark of a eucalyptus tree, about 8 feet up. I climbed up on adjacent wall and grabbed it. It is a black hummingbird. It was very cold and didn't appear to be able to move, except for grabbing with its feet. Its eyes were closed, and it uttered a high "scree" sound over and over. After it was in my hand several minutes it warmed up and began breathing faster and vibrating with life. It opened its eyes, and tried to flap its wings. Apparently these hummers go torpid at night. The night isn't very cold here - 45° or 50°F. There is no wind tonight. I just heard what I think is a bat flying above, the first I've heard in this area. No other night sounds are prevalent. I saw the droppings under the bushes. They are long and viscacha or gopher droppings.

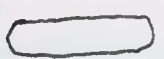


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15 mi. W Aurivilca, 11000 ft., Depto La Libertad, Peru
Sept. 1 (cont.) shaped. Perhaps guinea pigs made them. Dr. Koford didn't set any steel traps for them, but maybe will do it tomorrow. If they are guinea pig droppings, there's a chance of getting them because they are diurnal.

Sept. 2 Checked our traps. I had no mice in mine. Dr. Koford caught 8 mice — 5 Oryzomys, 1 Calomys sorex, and 2 Phyllotis. Ray caught 2 Phyllotis pictus, 1 Phyllotis andersoni, and 1 young Oryzomys. My remaining Paralomys died. I will skin her today (MAL 376). This morning Dr. Koford saw a rather large animal running through the brush and shot at it but missed. Perhaps it was the animal that leaves the droppings that look like this:
. They are hard and light green + powdery inside. They are left in piles under brush and in the runways. We left here at ^{12:45 pm.} ~~12:00 noon~~ and arrived at our old campsite on the road to Huacadey at 3:00 pm.

5 mi. SW Otuzco, 8000 ft., Depto. La Libertad, Peru
We are back here with the prime intention of getting live Phyllotis magister for chromosomes. I took 23 snap traps, 21 small shermans, and 21 large folding shermans up the steep, ^{narrow} dry, brush + rock canyon where I trapped last time. In the lower part I set the live traps, alternating small + large shermans. About 500 ^{vertical} ft. up I began setting my snap traps. There seemed to be more dry leaf litter above, although below there is quite a bit. I trapped mostly among the rocks, and set a few



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5 mi SW Otuzco, 8000 ft., Depto. La Libertad, Peru

Sept. 2 (cont.) traps under brush and magay cactus. Ray set snap traps and small shermans lower down on the slope. Dr. Koford set snap traps and large shermans up the hill. It is a fairly warm, windless & cloudless night. There are a few insects calling, and no night birds apparent. I saw some mouse sign where I was setting traps, and trapped in much the same kinds of places as I did last time. At about 5:00 pm little flies are very active. At night, the insects seem to be predominantly moths. No bat calls heard.

Sept. 3 Last night after 10:00 p.m. I heard bat cries. Insect sounds were more abundant, also. At 6:45 this morning I checked my traps. I caught 4 mice in my large shermans, 3 in small shermans, and 9 in the snap traps, a total of 16 mice. Eleven of them are Phyllotis andinum, 6 alive and 5 dead. I only got 1 Akodon in a live trap, and 4 higher up in the thicker brush in snap traps. Ray caught 4 Phyllotis andinum and 1 Akodon. 2 dead and 2 alive. In a live trap Dr. Koford caught a very large Oryzomys. The Akodon seem to be more abundant higher up in the thicker, deeper brush. I caught one beneath a magay plant. After I finished picking up my live traps I stopped to rest a minute. I soon saw something that ran like a squirrel approaching me

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Sept. 3 (cont.) 5 mi. SW Otuzco, 8000 ft., Depto. La Libertad, Peru
from a large rocky brush pile. It headed towards my 2nd snap trap, about 12 feet from me and I got a good look at it. It looked like a long-tailed weasel, but it was larger. The body was a rich reddish brown and the pointed head was darker. There was a white ventral and a long thin tail. It nosed my trap, then saw me and ran down the hill through the brush and rocks. The trap it nosed had a Phyllotis andinum in it.

Discarded mice: 3 Akodon, non-breeding, 5 Phyllotis andinum, one tail saved for flea specimen.

30 mi. S Trujillo, Depto. La Libertad, Peru

We got to Trujillo at 3:30 pm and stayed until about 5:00 pm. Then we headed S on our way back to Lima and went 32 miles by the panamerican highway. at 6:30 we saw a dirt turnoff that lead to a rock quarry, where we are camped. I heard a couple of bats. We are in a barren hilly region that is very rocky and open. The night is warm and windless.

20 km. N, 6 km. W Chancay, 800 ft., Depto. Lima, Peru

Sept. 4

Left our overnight campsite at about 7:00 am and got here at 2:40 pm. We each went viscacha hunting here at the Lomas. I set 2 steel traps at entrances to what looked like viscacha burrows beneath large boulders. Some droppings are fresh, but most are very old. According

Sept. 4
(cont.)

20 Km. N, 6 Km. W Chancay, 800 ft., Depto. Lima, Peru
to Dr. Koford there is much less sign of viscacha now than there was 2 years ago here. Ray was the only one to see a viscacha, but only managed to wound it. I put up a bat net at a narrow part in the valley a little ways up. I hear bats.

9:00 pm. Dr. Koford and I went gecko hunting. We walked up the canyon and looked among the rocks and cactus. We didn't see any until just as we were getting back to camp, when I saw one run near where I was walking. It is rocky soil of coarse sand, blackened by the little lichen growing on it. There was some cactus nearby. The gecko (MAL 386) is about 2 in. S-V, and a dark brown mottled with white. Tomorrow we will try to take care of some business in Lima, then head further south.

Sept. 5

7:00 am. I checked my net and 2 steel traps. Nothing in the net, but in one of my steel traps was a viscacha! Apparently it got in last night and was caught by the right forefoot ^(which is hidden). Then some fox (or skunk perhaps) must have gotten to it. The left rear leg had been gnawed on and the meat eaten. The left flank had the hair slipped already and the viscacha was dead, though still warm. I am making a complete skeleton of it. No one else caught anything. We left for Lima at 9:00 am.

5 mi. SSW Paracas, Depto. Ica, Peru

Sept. 6

Last night we slept at Pearson's study area. We left at 7:00 am. this morning on the Panamerican highway headed south, and decided to explore the Paracas Peninsula, which Manuel Plenge recommended to us for seeing condors. The peninsula is fairly barren and somewhat hilly, mostly of sand and rocks and a few cliffs going down to the ocean. I caught a lizard ~~near~~ at a ~~the~~ rock pile near the water. There are lots of pelicans, guano birds, and sea gulls here. Dr. Kopford shot a Aimophila. We saw one condor as it hovered about 50 feet above the water. At about 3:30 pm we left for Nazca, arriving at around 5:30, whereupon we visited Bill Franklin, who is studying vicuñas at the preserve. Tonight we are camped at a clearing south of Nazca. Tomorrow will get car repairs done at Nazca and in the afternoon head towards the preserve. We found 2 young dead sea lions at the Paracas Peninsula, probably killed by fishermen. Dr. Kopford took the skull of one of them.

Nasca, Depto. Ica, Peru

Sept. 7

Last night Dr. Kopford and I went gecko hunting, but did not find anything. The area had been recently plowed. This morning we saw that the hills were close by and we could have

Sept. 7.
(cont.)Nasca, Depto. Ica, Peru

gone there had we realized in the dark that they were there. We have gotten various necessary jobs done here today. We plan to head for ~~Galaras~~ at about 3:00. It's supposed to take about ~~2~~ $2\frac{1}{2}$ - 3 hours to drive up there to 12000 ft.

35 mi. ENE Nasca, 10500 ft., Depto. Ayacucho, Peru

7:00pm. We left Nasca at 3:30pm. and drove up the road toward ~~Salas~~ ^{Galaras}. We knew we couldn't get all the way to the preserve before nightfall, so at about 5:30 we stopped ~~and~~ 52 miles up the road and are ~~now~~ camping at 10500 feet tonight, where there are rocky hills with natural rock formations creating walls & crevices. It is dry and heavily grazed here, and only small shrubs are growing. Not far from here on the road Ray saw what sounds like a grison from his description. We set out snap traps. I set 23 among the rocks, where many small caves are formed. In some of these are rather large droppings, almost viscacha size. In one little cave were lots of droppings of different sizes mixed together. I set 2 small steel traps at these entrances. It seems to be getting dark earlier now, and light earlier in the morning. For a while it was light at around 6:15am & dark at 6:45pm. This seems to have shifted half an hour and

35 mi. ENE Nasca, 10500 ft., Dept. Ayacucho, Peru
Sept. 7 (cont.) we are now rising at 5:45 and it gets dark at 6:15. Perhaps it is the change in ~~longitude~~ latitude. I first noticed this when we were camped near Chancay.

8:30 pm. I went to check my traps. In a snap trap set at the entrance to a little rock cave (entrance 5" x 6") was a freshly caught Phyllotis of some sort. The ears are large and the pelage is lax and surprisingly light-colored. It was dead, but still warm. (MAL 389). The tail is longer than the body. Perhaps it is one of the spp of Phyllotis darwini or Phyllotis boliviensis. Nothing yet in Koford's traps. The night is cold and clear and windless on the whole.

Sept. 8 6:00 am Checked my traps. I had 3 more mice like the ones I caught last night. One small male was caught in the trap I reset last night after taking the mouse out. The other mice were caught also in holes in the rocks & under rock shelves. I lost my second steel trap. Dr. Koford and Ray each caught 2 ~~mice~~ of the ~~sp~~ same kind of Phyllotis. Ray saw about 4 viscachas in the rocks by the road. It is very dry up here. There was no condensation or frost this morning. Last night was cold. I discarded a female mouse, 20g. with uterine scars, because it had a crushed skull. Possible size dimorphism? We left at about



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Sept. 8
(cont.)

Galeras, 4000m., Depto. Ayacucho, Peru

7:30 am to Galeras, which was 17 miles further up the road. In the ~~pan~~ pampa grasslands we saw vicuñas, alpaca, & llama. The habitat is not particularly good. It is dry and overgrazed.

Apparently there are ~~not~~ tinamon and vicachas here, too. We ~~we~~ set up camp by the forestry station but after putting up our specimens we decided to move because of problems with the hogs.

12:00 noon. We drove 6 miles E on the road from headquarters. at this point we saw a dirt road branching off on the right and took it. We've stopped and are looking around. We will probably camp here tonight as the terrain looks good. There are ~~some~~ expanses of good tinamon grassland as well as cliffish rock formations + walls for mice. We have seen several family groups of vicuñas, usually numbering about 6. They are fairly tame and don't run off if watched from the road. There is a large male with each group, and he is on the lookout, often on a high part of land, close by his grazing family. The male always keeps between the intruder and his group. We saw one male ~~do~~ quick leg movement with his hind legs, and lay his ears back. They also utter a type of warning or alarm call that is a high, almost whistling type squeal. It reminds me in some ways of a bee hum or a dove, although

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Pompa de
Galeras. 4000 m., Depto. Ayacucho, Peru

Sept. 8
(cont.)

of course the quality is vastly different. It does ~~as~~ seem that noise is made both by exhaling + inhaling, however. Vicuñas are slender + have long necks. They seem to be characteristically golden tan with long white hairs hanging from their lower necks - probably to protect their forelegs when they lie down.

I get the impression, from following a family group, that vicuñas have fairly good eyesight. I was upwind from them, and still, from ^{more than} a couple of hundred yards away the male would be watching me and giving the warning call. The vocalization varies from call to call. Perhaps a faster vocalization indicates more anxiety. The bee-having type of call allows the call to reflect ~~a~~ ~~for~~ the rate of breathing, which may be proportional to the amount of anxiety. In family groups, the most useful, indeed, the only kind of communication is that which ~~has~~ makes known the emotional state of the caller.

Our locality for this place will be 10 mi. WNW Pucallpa, 13000 ft. At 3:00 pm I began setting traps. I had 20 small shermans and 31 snap traps. I set 27, alternating snap + live, along the ^{low} rocky cliffs nearby. When the habitat began looking bad, I took the remaining 17 snaps + 7 live traps across the valley to a rocky hill where Queñua trees were growing on one side. This area ~~seemed to~~ ^{had a lot}



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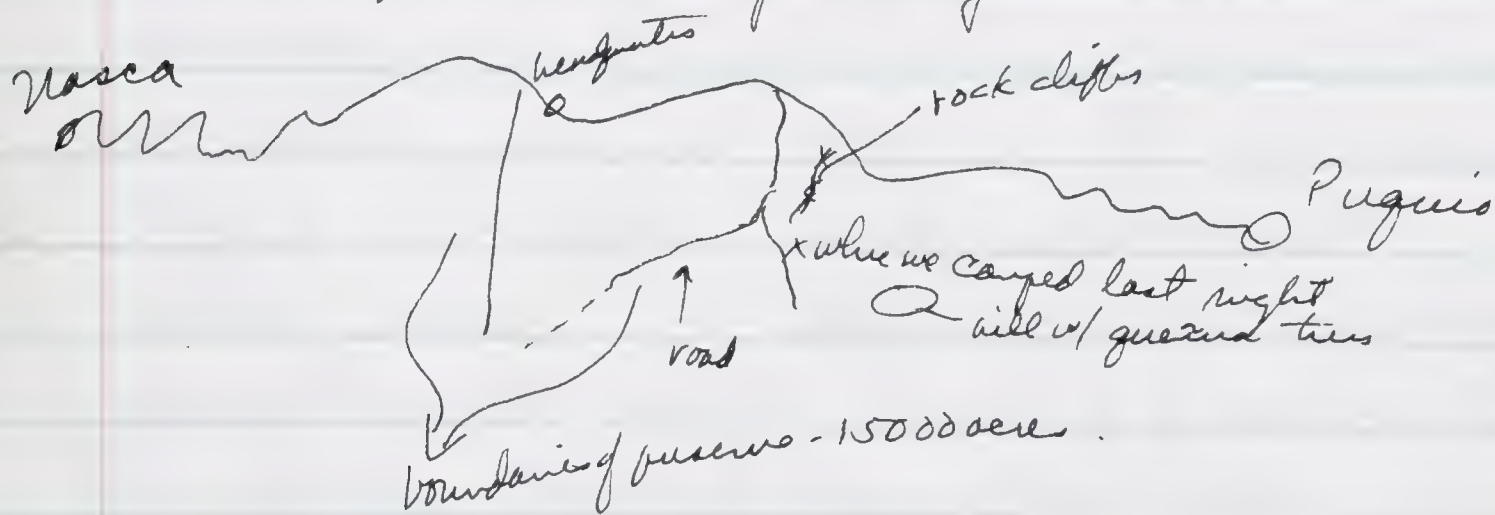
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Pampa de Galeras, 4000 meters, Dept. Ayacucho, Peru
Sept. 8 (cont.) more sign than the area where I put my first traps. The mixture of boulders and small rocks + brush provides a lot of shelter for large + small animals alike. Droppings the size of Mus droppings to the size of very large carnivores were under rocks + boulders. I set only 5 snaps + 7 live traps in this area since Dr. Koford had been there earlier + set all his snap traps there. In the base of a hollowed Queñua tree I set a small steel trap. In this hollow were very large carnivore droppings. I set 12 snap traps on the other side of the hill where the habitat was not unlike where I set my first group of traps. The sign was much sparser there. Dr. Koford set steel traps beneath large boulders where there was large carnivore sign near the trees. Evidently the hill supports a great diversity of mammal forms. It, too, however, is grazed, as is the whole pampa here. There are goats, burros, horses, sheep, alpaca, vicuña, llama, and cattle grazing heavily in this whole region. It was windy today, but tonight has calmed down, though it is fairly cold.

Sept. 9 Dr. Koford heard birds calling very early this morning. Perhaps they are tinamou. Checked

Sept. 9
(cont.)

10 mi. WNW Puguio, 13000 ft. Dept. Ayacucho, Peru
our traps. Neither Ray nor I caught anything. Dr.
Koford caught about 7 mice - Phyllotis pictus, Calomys
ducille, and Akodon boliviensis, up around the
queuña trees. No one caught anything in steel
traps. At ~~12~~ 11:30 am. we went back to headquarters.
Bill Franklin took us around for a couple of hours
and showed us how he is studying vicuñas. Most
of the work is quantitative, and he has the
dynamics of the ranges & intergroup interactions
recorded. We drove back up the road and took
the turnoff we took yesterday:



We took the right fork this time. Close to the
junction we saw 2 of the large variety of
tinamou (Tinamotis pentlandi) (The one
we got at Paraceta was Notoprocne pentlandi).
Dr. Koford has the idea that tinamou go around
in groups of 3 - 2 ~~♀♀~~ ♀♀ and 1 ♂. We only
saw 2, however, and couldn't get either one.
This may be an altitudinal low for this
species. They were in short brush and rocks.
The vegetation was fairly sparse & short. We

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Sept. 9
(cont.)

10 mi. WNW Pucuro, 13000 ft., Depto. Ayacucho, Peru
decided to camp in this vicinity tonight. We
drove back to headquarters to get our car and
returned here, where we are camped below some
Inca ruins (the name of this valley is Inca Huasi =
Inca House). There is a small stream nearby, and
I spotted a green-winged teal (*Anis flavivirens*)
there, which Dr. Koford shot. The rock walls
here near the road have piles of small mouse
droppings up on the rocks on the walls. I
walked about $\frac{1}{3}$ mile north to the ruins where
I set 40 snap traps among the rocks. There were
droppings around, but not as abundant as
at the rock walls near camp. The birds here
tend to go in flocks, so it probably isn't
breeding season. Dr. Koford set about 30 snaps
across the road at another bunch of rock walls.
Tonight Ray will set traps where the piles of mouse
droppings are. This afternoon when I was
out hunting tinamon I saw a lizard run
under a rock. I lifted the rock and it was
frozen there, so I grabbed it. (MAL 395).
Tonight is clear and cold again.

Sept. 10

At about midnight last night I heard seed
snipes calling as they flew over. At 6:30 am
I checked my traps. In the first 20 traps
I had 10 mice - 8 *Phyllotis pictus* and
2 *Phyllotis boliviensis*. *P. boliviensis* is

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Sept. 10
(cont.)

10 mi. WNW Puzos, Depto. Ayacucho, Peru
diurnal. Maybe that explains why so many of my traps set in places where there ~~was~~ were fresh droppings were empty. The pictus were caught fairly close to each other. Perhaps the boliviensis & pictus have separate territories as well as being active different times of the 24 hr. day. They are about the same size, but boliviensis has a shorter tail, seemingly more contrastingly colored, ferrug rusty colored ears with a little white at the base, darker soles of the feet, smaller ears, and a darker general ~~pl~~ pelage becoming rusty ~~and~~ at the back. At 8:00 am when I got back to camp I saw a boliviensis run through the ichu, stop near a rock, then run to a rock wall where it climbed up about 2 1/2 feet into a crevice. Most of the traps I had set last night caught animals at ground level. Perhaps the boliviensis can climb whereas pictus tends to stay closer to the ground. Ray caught nothing, but shot 2 finches and a flycatcher. Dr. Keford shot a hummer, and caught 6 pictus and 1 boliviensis. I set about 40 small + large shermans around the rock walls this morning. The seed snipes were calling



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Sept. 10
(cont.)

10 mi. WNW Pagueio, 13000 ft., Depto. Ayacucho, Peru

this morning, too. I discarded 2 pictus - a juvenile ♀ and a non-breeding ♂.

11:30 am. I checked a few of my traps nearby and found a young Akodon boliviensis in one set at the base of a rock wall.

12:30 pm. We are breaking camp to look for tinamou. Nothing in any of my other live traps - apparently P. boliviensis may be active only in the early morning or later in the afternoon. Ray saw 4 vicachas at rock formations a little less than a mile away. We spent the ^{rest of the} afternoon hunting tinamou in the area where we saw them yesterday, but saw neither the birds nor any sign of them ever having been there. At 4:30 we headed W from the headquarters and trapped along an area of large rocks + various bushes. Ray set out about 30 snaps, as did Dr. Koford. I set about 20 small shermans + 20 large folding shermans. There were many holes with droppings in them. I set traps at these places, among the bushes, and a few were or less out in the open. I saw cluster of droppings out in the open that were unusually angular .

We are spending the night at headquarters and will collect the traps in the morning. We estimated the locality of our trap site as ¹⁵~~10~~ mi. WNW Pagueio, 12000 ft. Heard frogs calling in the stream near headquarters ~~last night~~ during the night.

[2 mi. W summit]

15 mi. WNW Puzos, 12000 ft., Dept. Ayacucho, Peru

Sept. 11

6:00 am. We left headquarters and drove here to our trap site. In my last trap, a small sherman placed ~~at~~ beside a large rock at a crevice hole, I had a live Marmosa. Perhaps this is an altitudinal record. Ray caught 1 mouse, a Phyllotis darwini. Dr. Koford got 7 mice — 1 Neotomys ebriosus, 1 Phyllotis boliviensis, and 5 Phyllotis darwini. Many of these were caught in brushy areas. There is a little stream with small, somewhat muddy pools in which there were lots of tadpoles and frogs. We caught 2 frogs and a tadpole. The frogs are medium sized, dark and reddish on the back. I noticed the pupils are very tiny and the eyes face forward. I will try to keep my Marmosa alive for behavioral studies. At 12:00 noon we put out traps again. I set 30 snap traps among the rocks and bushes. Ray set snaps & live traps, and Dr. Koford set snaps. There are viscachas here. Dr. Koford shot a young male. I set 3 steel traps around a boulder that looked like it might house viscachas. We drove back to headquarters, and on the way saw two Aplomado Falcons flying across the grassland. We saw one take off from a low place, fly about 100 yds., then the second followed, and they landed at about

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Sept. 11
(cont)

15 mi. WNW Pucuro, 12000 ft., Depto. Ayacucho, Peru
the same place. One flew and landed close
to the road. Dr. Koford shot it with a full load.
The other came around and landed on a nearby
rock and watched as Dr. Koford picked up the body.

Sept. 12

Checked our traps. I caught 6 mice - 5 Phyllotis
darwini, and 1 new mouse, with shorter ears than
darwini and a very short tail. It looks like
a Phyllotis. I caught it by the base of the tail
in a trap set beneath a bush on ^{an} open rocky
slope of a gentle hill. Dr. Koford caught a
juvenile Abodon boliviensis and 3 P. darwini,
and Ray caught a Nestomys and a P. darwini.
We drove down to Nasca, arriving at about 10:30 am,
and spent the rest of the day there getting
necessary chores done. At 7:30 pm we headed
towards the Paracas Peninsula, stopping at
10:30 pm a little north of Ica. I will dispose
of the animals I caught today except for the
short-tailed Phyllotis.

5 mi. SSW Paracas, Depto. Ica, Peru

Sept. 13

We got here at about 7:30 am this morning, and
took the road to Laguna Grande for a little
while. We hoped to see cinders along the
cliffs over the beach, but didn't. We decided
to come back to this bay because we had
luck finding things washed up on the shore
last time. I found a penguin in

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5 mi. SSW Paracas, Depto. Ica, Peru

Sept. 13
(cont.)

the water on the beach. Apparently it had been dead a while. The insides were eaten out, bones and all, and all that remained was part of the skin & the head. Jim saving the skull and flippers. We also found 2 skulls and part of the back of leather-backed turtles. There are huge turtles that may be rare around this coast. More sea lion carcasses were along the beach - one with several turkey vultures feeding on it.

2:00 p.m. There were at least 28 turtle heads on that one short beach. Perhaps they are being killed by the fishermen. There were also parts to about 4 other penguins. Both the penguins and the tortoises had backward-facing spines lining the roof of their mouths, presumably so fish they eat will go down, only. Haven't seen any coveys here today. Spent the afternoon organizing specimens in preparation for the trip back to the US. I put up the short-tailed Phyllotis I caught yesterday (MAL 409).

